CHEMICAL LIBRARY

MAR 24 1931

Pharmacists Have Responsibilities of Service and Also Duties Which Include Making the Public Acquainted with Pharmacy, Its Mission and Its Part in the Life of the State and Nation.

Vol. XX, No. 3 MARCH, 1931

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

CONTENTS

Frontispiece and Sketch—Walter A. Bastedo, M.D. 199
Editorial:
Recognition of the Service of Pharmacy 200
Ebert, Maisch, Rice—Pharmacists 201
Contribution of Science to Public Welfare 201
Biochemistry in the United States 202
Scientific Section:
The Application of Statistical Methods to Pharmaceutical Research. II. Correlation Coefficients—Munch 203
Propadiene—Lott and Christiansen 207
A Phytochemical Study of Hydrastis Canadensis (Goldenseal)—Gillis and Langenhan 210
A Phytochemical and Pharmacological Study of Mitchella Repens (Linné), N. F. V—Briggs 224
Solubility Determinations of U. S. P. Chemicals—Schnellbach and Rosin 227
Bibliography of Pharmaceutical Research—DuMez 234
Pharmaceutical History Brought to Light by a Famous Misnamed Picture—Kassner, Ph.C., F.I.C. 236
Ex-Presidents of American Pharmaceutical Association from Baltimore as I Remember Them—Culbreth, M.D. 246
Flueckigeriana—Kremers 252
Hydrogenated Oil as an Ointment Base—Fiero 254
Department of Business Management:
A Problem for Manufacturers of Price Cut Merchandise—Olsen 260
The Department of the American Association of Colleges of Pharmacy:
Teaching Incompatibilities in a Test-Tube—Briggs 264
Some Fallacies of Quantitative Biological Testing—Rusby, M.D. 266
The Growing Importance of Professional Pharmacy—Christensen 267
Proceedings of the Local Branches 271
Public Facing Monopoly—Brokmeyer 288
Association Business 291
Tung Oil in Florida—Foote 295
Editorial Notes 296
Personal and News Items 297
Obituary 298
Societies and Colleges 301
Legal and Legislative 303
Book Notices and Reviews 305
Additional News and Association Items 306
Advertising—Cover Pages 2, 3 and 4 and pp. I–XXVI.

Published Monthly by the American Pharmaceutical Association: Office of publication, 20th & Northampton Sts., Easton, Pa. Editorial Office, 10 West Chase St., Baltimore, Md.

Annual Subsription, $4.00; Single Numbers, 35 Cents.

THE 79th ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN MIAMI, FLA., DURING WEEK OF JULY 27th. HEADQUARTERS, COLUMBUS HOTEL. LOCAL SECRETARY, G. H. GROMMET, 2364 S. W. 11th ST., MIAMI.

The 1931 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conferences of Pharmaceutical Association Secretaries and of Pharmaceutical Law Enforcement Officials will also be held at Miami, same time and place. The Plant Science Seminar will be held at Gainesville, Fla., during the week of July 21st.

Entered as second-class Matter, January 23, 1917, at the Post Office at Easton, Pa., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103. Act of October 3, 1917; authorized July 10, 1918.

MARINOL

The One Agreeable
- Preparation of -

COD LIVER OIL

There is in science or nature no substitute for COD LIVER OIL. The one problem is to make it acceptable and digestible.

MARINOL

is really delicious—that has been said about it many times.

Originated and Made By

FAIRCHILD BROS. & FOSTER

CALOMEL~

Of Unusual Fineness

Mallinckrodt "Special" Calomel U.S.P. is exceedingly fine, even finer and bulkier than the imported English brands. Special Calomel permits of more perfect mixing with other ingredients when compounding prescriptions. It is especially desirable for ointments. Because of its extreme fineness it retains its pure whiteness even under excessive trituration.

This is but one example of the excellent quality of some fifteen hundred items in the Mallinckrodt Line. For 68 years the Mallinckrodt name has stood as a symbol of quality in prescription departments.

We'll gladly mail, on request, a one-ounce sample of our "Special" Calomel for 20¢.

Mallinckrodt
FINE CHEMICALS

MALLINCKRODT CHEMICAL WORKS
St. Louis *Philadelphia*
New York *Montreal*

THE A. PH. A. CONVENTION IN MIAMI, JULY 27TH TO AUGUST 1ST.

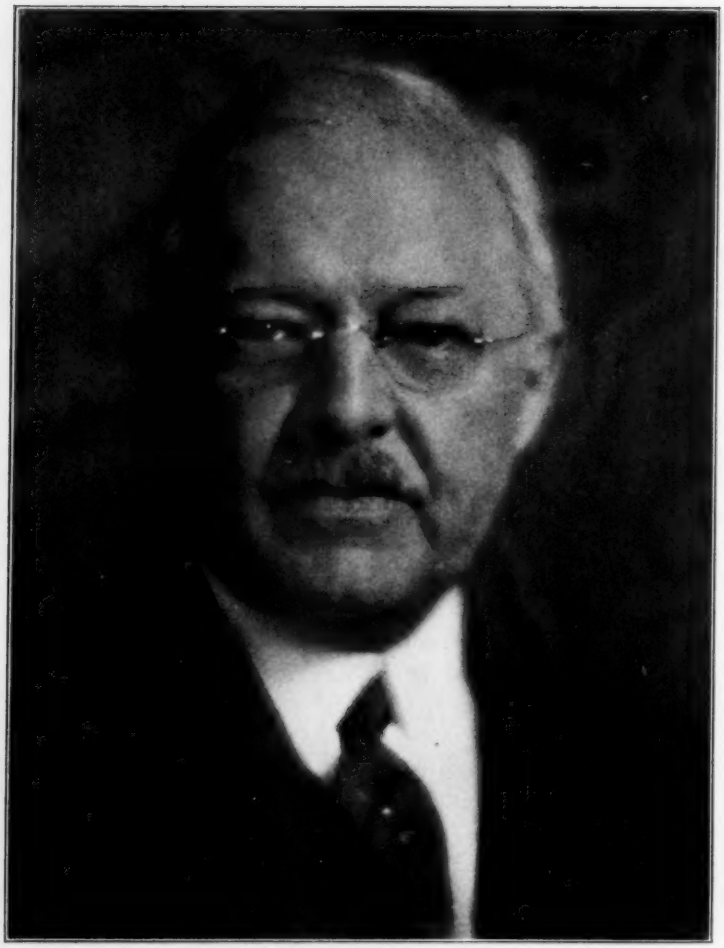
MAYAMI, from which the name "Miami" is derived, means "vast" and was given to Lake Okeechobee, by Florida's earliest Indians. Miami is approached by a most beautiful boulevard of four park driveways running four miles along a many tinted bay.

The Headquarters Hotel is shown in the picture, the first tall building in the upper part of the cut; in front of it is Bay Park.

In 1896 Miami had but two families; to-day it has a population of 110,000, the second largest city of the state.

After the close of the convention, opportunity will be afforded for a trip to Havana and returning to Miami, Wednesday night, following the convention. The cost of the Havana trip is $75.00, which includes round trip transportation, Pullman seat, state room and luncheon on steamer, Key West to Havana and return; transfer of passengers, Cuban tourists' tax, room at hotel with private bath, various sight-seeing trips, but no meals are included while in Havana and on trains. Those who have not received the Havana folder should address C. C. Merrell, Chairman, Havana Tour Committee, 2620 S.W. A St., Miami, Florida.

THE State University of Florida is located in Gainesville, including the School of Pharmacy. The surrounding country is interesting to the tourists for its water holes or "Alachua," as the Indians called them. Into one of these, the Devil's Millhopper, a bowl, 120 feet deep, twenty streams pour their waters without raising its level.



WALTER A. BASTEDO, M.D.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XX MARCH, 1931 No. 3

THE PRESIDENT OF THE U. S. PHARMACOPŒIAL CONVENTION, 1930–1940.

Dr. Walter Arthur Bastedo, the president of the U. S. Pharmacopœial Convention, was born in New Market, Ontario, and is an alumnus of the University of Toronto; coming to New York at the close of his teens, he matriculated at the New York College of Pharmacy (Columbia University) and graduated in 1894; he continued his studies at Columbia University, earning his M.D. degree in 1899; his *Alma Mater* honored him with the degree of Sc.D. in 1929.

Dr. Bastedo was curator of New York Botanical Gardens, 1897–1898. He is author of "Laboratory Exercises in Pharmacy for Medical Students," which has gone through two editions; of "Materia Medica, Pharmacology and Therapeutics;" of *Pharmacology and Therapeutics of Gastro-Intestinal Tract* in "Nelson's Medicine;" *Bacillary Dysentery* in "Blumer's Bedside Diagnosis;" editor of section on *Newer Remedies* in "Reference Handbook of the Medical Sciences;" he has also contributed many articles to the publications on pharmacy, pharmacology and medicine.

He was representative of the president of Columbia University on the Faculty of the College of Pharmacy (Columbia University), 1914–1921; teacher in Pharmacology and Therapeutics at Bellevue, Cornell and Columbia; is assistant professor of Clinical Medicine at Columbia. He is originator of "Bastedo's Sign" for the diagnosis of chronic appendicitis, attending physician at City Hospital and St. Luke's Hospital and consulting physician to several hospitals.

Doctor Bastedo is a former chairman of the Section of Pharmacology and Therapeutics of the American Medical Association; past-president of the American Gastro-Enterological Association, New York Gastro-Enterological Association, and an Honorary Associate of the American Proctologic Society.

The U. S. Pharmacopœial Convention of 1910 elected him as a vice-president of the organization and again in 1920, and, in May 1930, as president, for the decennium, 1930–1940; parts of his address on that occasion will be found on page 669 of the July 1930 issue of the JOURNAL. In 1907, Doctor Bastedo proposed the idea of designating "certified pharmacies" for the information of physicians.

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase Street, BALTIMORE, MD.

RECOGNITION OF THE SERVICE OF PHARMACY.

A PURPOSE of all pharmacists should be to have pharmacy deservedly recognized and given due credit for the achievements of pharmacists, and not permit the records of their achievements to be absorbed or adsorbed by those of other arts and professions. There is no desire to take away the glory of others and of other activities, but pharmacy should have due credit for its work. Dr. W. W. Charters in "Basic Material for a Pharmaceutical Curriculum" said that "the beginnings of pharmacy are lost in the mists of antiquity, and its history is replete with substantial achievements."

As striking, outstanding examples of what is meant, Scheele may be referred to; he was, throughout his life, from youth until his death, a pharmacist; true, his work largely related to chemistry, but he studied these sources of his investigations, because he was brought in contact with them in his pharmacy. He discovered glycerin in the manufacture of lead plaster, the basis of plasters and some cerates and ointments; that he was observant is revealed by a study of his many discoveries. Seldom is Scheele spoken of as pharmacist or apothecary; chemistry was enriched by his discoveries and researches—pharmacy should have credit accordingly.

Both Caventou and Pelletier were pharmacists, but they are seldom referred to as such; the same applies to Baumé; Sertürner is, perhaps, more frequently spoken of as pharmacist—all of them rendered distinguished services, the first, by the isolation of quinine; Baumé by his hydrometer, but also for his successful efforts in removing many of the traditional superstitions which for a period burdened and afflicted the materia medica with polypharmacal combinations of disgusting ingredients; the discoverer of morphine was a pharmacist throughout life, from youth up. Pharmacy shares with chemistry the honors of Woehler and Liebig, but holds a stronger claim to Unverdorben, and so these references could be continued, and American pharmacists brought into the picture also.

Errors should be corrected as promptly as possible and facts brought into light when the mists of misapplication obscure or hide them.

President F. H. Carr, of the Society of Chemical Industry in England, in 1928, questioned whether a picture in the Chemists Club, New York—supposedly Sir Humphrey Davy and Michael Faraday, as helper—was in accord with facts. The story of the picture is told in an article of this issue, wherein there is sufficient evidence for stating that the picture is of a laboratory of a well and favorably known English pharmacist. Without determining the facts, the assumption, that the picture was that of a chemist's laboratory, is readily understood.

Dr. John Morgan, who was pharmacist and physician, said nearly two centuries ago—"We must regret that the very different employment of physician, surgeon and apothecary should be promiscuously followed by any *one* man; they certainly require different talents. Let each cultivate his branch apart, the physician, surgeon, apothecary (etc.); the knowledge of medicine will then be

daily improved, and it may be practiced with greater accuracy and skill." The deduction is that men of different professions may work together, but each class is best qualified to render service in the department for which the individuals have been trained by experience and education.

Pharmacy is making progressive advances in pharmaceutical education and professional service; it needs the background of its accomplishments and the records of its achievements, and pharmacists are justified in being solicitous for the honor and interests of their profession.

EBERT, MAISCH, RICE—PHARMACISTS.

THIS is the 25th anniversary year of the death of Albert Ethelbert Ebert, the 90th year of his coming to the United States. It is also the centenary of the birth of John Michael Maisch, and the 90th anniversary year of the birth of Charles Rice. The purpose of these lines is to direct attention to these pharmacists in very brief tributes, if the few words may be so termed.

The last words of Albert E. Ebert were: "The AMERICAN PHARMACEUTICAL ASSOCIATION—it was my life, it gave me a profession." He founded the Ebert Prize Fund in 1873, and after his death practically all of the property of which he was possessed was by his will given to the ASSOCIATION. He received his doctor's degree from the University of Munich.

In 1863, through the efforts of Dr. E. R. Squibb, John M. Maisch became the chemist in charge of the U. S. Army Laboratory in Philadelphia, and had charge of it until its discontinuance at the close of the War. Although the laboratory was started late, the records show that thereby the Government was saved the sum of nearly $800,000.

"Thoroughly versed in almost every cultivated language, Charles Rice had far greater abilities than any of his friends realized. He spoke French, Spanish, Portuguese, German and English fluently; he could speak Turkish and Dutch and had studied the Lithuanian language. He knew Latin, Greek, Hebrew and Arabic. He was known as a Sanskrit scholar, here and abroad, and his rack for the great Sanskrit lexicons became famous." This is the 90th anniversary year of the birth of Charles Rice and the 50th of his (51st) election to the chairmanship of the U. S. P. Revision Committee.

CONTRIBUTION OF SCIENCE TO PUBLIC WELFARE.

THE late Dr. Richard Bishop Moore, former Dean of Science, in Purdue University, was largely responsible for the opportunities of the use of radium in the United States. He collaborated with Madame Curie for many years and on her recent visit to this country Dr. Moore was asked by President Hoover to accompany her to the ceremony at which the formal presentation of a gram of radium was made.

Dr. Moore's name is not only linked with the development of the use and availability of radium, but also with having made helium available for air transport. In 1917, at the Kansas City meeting of the American Chemical Society

Dr. Moore presented a report which resulted in the experimental helium plants in Texas, and it was due to his research that the non-inflammable gas came into practical and extended use. In 1919, after several years' connection with the Bureau of Mines, Dr. Moore was named chief chemist of the Bureau; in 1926, Purdue University selected him for its Dean of Science and in the same year he received the Perkin medal for outstanding achievements in chemical research. He studied at Argyle College, London, then at Edmund's College, and in Paris. After returning to the United States he came to the University of Chicago and, in 1916, earned his D.Sc. at the University of Colorado. As instructor and teacher he was connected with Oswestry High School, England, and Birkbeck Institute, London; as assistant in Chemistry at the University of Chicago, as instructor in Chemistry at the University of Missouri and professor of Chemistry at Butler College, Indianapolis.

He was connected with the Laboratory of Physics and Chemical Investigations, as chemist in charge of Chemistry and Metallurgy of Rare Metals, chief chemist and chief of the Division of Mineral Technology. He made a survey for the U. S. Geological Survey of the thermal waters of the Yellowstone National Park for radioactive properties and had charge of all helium work for U. S. Bureau of Mines; he was a member of the U. S. Helium Board. His modesty bespoke his merit; in a way, his death probably resulted from cancer developed as a result of his work with radium during many years. His radium researches have given relief to many afflicted with cancer and other diseases, and helium provides greater safety for the crews and officers of air crafts than would be possible without his researches that made larger production possible. Dr. Moore died at the age of 50 years; the memory of his labors should and will live on.

BIOCHEMISTRY IN THE UNITED STATES.

WE ARE taking the liberty of quoting parts of an editorial of the *Journal of the American Medical Association* of February 21, 1931.

"Physiologic chemistry—or biochemistry, as it has been commonly designated more recently—has long since come of age. The subject has become an important and integral part of the study of medicine and the practice of the art. The special technic of biochemistry has been introduced into clinical diagnosis to such procedures and with bacteriologic and immunologic methods of examination and research. A recent writer[1] has remarked that to-day it is quite safe to state that in the United States there is hardly a university worthy of the name that does not have on its staff one or more competent investigators in physiologic chemistry and a well-equipped laboratory with resources adequate for at least some lines of research in this field."

Extended references are then made to other centers for this important work and its development in Europe and in the United States. Reference is also made to the work of the American Physiological Society and that of the American Society of Biological Chemists, soon to celebrate its 25th anniversary. The comment concludes with the encouraging statement that "the entire development of this fundamental prerequisite of medical progress still partakes of the characteristics of youth with all its potencies for development. Little wonder that Chittenden has concluded "that there would seem to be good ground for the belief that the future of physiological chemistry in this country is full of promise, and that what has been accomplished is but the forerunner of more nearly perfect knowledge."

---

[1] R. H. Chittenden, "The Development of Physiological Chemistry in the United States," New York Chemical Catalog Company, 1930.

SCIENTIFIC SECTION

THE APPLICATION OF STATISTICAL METHODS TO PHARMACEUTICAL RESEARCH. II. CORRELATION COEFFICIENTS.*

BY JAMES C. MUNCH.

The correlation coefficient, r, is a measure of the degree or extent of co-relationship. It measures the proportional change in one variable of a pair when the other variable undergoes successive changes in magnitude. It is an abstract number which ranges in magnitude from 1.00 (perfect relationship) to 0.00 (complete lack of relationship). Between these limits, closer degrees of relationship are denoted by larger values of the coefficient. When one variable increases in value as the other increases, the relation is direct and the sign of the correlation coefficient is positive. When one variable decreases as the other increases, the correlation is inverse and the coefficient has a negative sign (2, 3, 4, 6, 9). The certainty of correlation is not directly proportional to the magnitude of the correlation coefficients. A correlation coefficient of 0.90 is eleven times as certain as a coefficient of 0.30 (6).

The first step in the determination of the correlation coefficient should be the plotting of the experimental results. The most accurate or most dependable value is taken as the abscissa, the other value of the pair as the ordinate. Inspection of the scatter diagram thus obtained indicates at once whether the degree of relationship is high or low, and whether the correlation is linear or not. The correlation coefficient, r, is usable only when linear correlation is indicated. Non-linear correlation may be calculated by appropriate methods; since they are of more limited use they will not be discussed in this paper.

Partial correlation coefficients are calculated to determine the degree of co-relationship between two variables when the effect of one or more additional variables is made constant. They tend to reveal spurious relationships (6, 9, 10).

The application of correlation coefficients reveals the extent of relationship directly and with mathematical certainty. As an example of the application of this type of procedure, the results obtained in the assay of a series of ouabain and strophanthus preparations by the M. L. D. frog and by the Knudsen and Dresbach colorimetric methods (8) are given in Table I. The values for the M. L. D. frog method are given in the first column. The mean of these values is 96.5. The deviation of each value in the first column from the mean is recorded in the second column under the heading "X" and the square of X is given in the third column. The sum of the squares is 80,683. When this sum is divided by "N," the numbers of pairs of observations (28 in this instance), the average value of the squares is found to be 2882. The square root of this value, which is 53.7, is the standard deviation, σ.

The fourth column contains the values for the colorimetric assay of the same samples and the next two columns the deviations and squares of the deviations of "Y." The sum of the squares of the deviations is 93,026, the average 3322 and σ 57.6.

---

* Scientific Section, A. PH. A., Baltimore meeting, 1930.

TABLE I.—CORRELATION BETWEEN M. L. D. FROG AND COLORIMETRIC ASSAYS OF OUABAIN AND STROPHANTHUS.

	M. L. D. frog.	X.	X^2.	Colorimetric assays.	Y.	Y^2.	XY. Plus.	XY. Minus.
	25	−71	5041	26	−84	7056	5964	..
	29	−67	4489	25	−85	7225	5695	..
	31	−65	4225	33	−77	5929	5055	..
	31	−65	4225	40	−70	4900	4550	..
	50	−46	2116	50	−60	3600	2760	..
	61	−35	1225	78	−32	1024	1120	..
	61	−35	1225	100	−10	100	350	..
	61	−35	1225	140	30	900	...	1050
	64	−32	1024	71	−39	1521	1248	..
	67	−29	841	75	−35	1225	1015	..
	73	−23	529	100	−10	100	230	..
	73	−23	529	100	−10	100	230	..
	80	−16	256	75	−35	1225	560	..
	85	−11	121	100	−10	100	110	..
	90	− 6	36	90	−20	400	120	..
	100	4	16	100	−10	100	...	40
	110	14	196	100	−10	100	...	140
	120	24	576	100	−10	100	...	240
	120	24	576	120	10	100	240	..
	120	24	576	135	25	625	600	..
	120	24	576	135	25	625	600	..
	120	24	576	200	90	8100	2160	..
	130	34	1156	144	34	1156	1156	..
	130	34	1156	155	45	2025	1530	..
	145	41	2401	143	33	1089	1617	..
	155	51	3481	150	40	1600	2360	..
	155	51	3481	215	105	11025	6195	..
	293	197	38809	286	176	30976	34492	..
Sum	2699	..	80683	3086	..	93026	79957	1470
Mean	96.5	..	2882	110.2	..	3322	...	..
σ	....	..	53.7	....	..	57.6	...	..

$$r = \frac{\Sigma XY}{N\sigma_X\sigma_Y} = \frac{79{,}957 - 1470}{28 \times 53.7 \times 57.6} = +0.90$$

$$PE_r = 0.6745\,\frac{1 - r^2}{\sqrt{N}} = \pm 0.02$$

The last two columns, headed "XY," are obtained by multiplying each deviation of X by the corresponding deviation of Y, noting the arithmetic signs of the deviations. These are assembled in columns of plus and minus products, giving sums of plus 79,757 and minus 1470, respectively. The formula for the calculation of the correlation coefficient is

$$r = \frac{\Sigma XY}{N\sigma_X\sigma_Y}$$

in which ΣXY represents the sum of the products of the deviations of X and Y from their respective means, N is the number of pairs of observations, and σ_X and σ_Y are the standard deviations of X and Y. Substituting the observed values in this equation

$$r = \frac{79{,}957 - 1470}{28 \times 53.7 \times 57.6} = +0.90.$$

The probable error of r is obtained by substitution in the formula

$$PE_r = 0.6745 \times \frac{1 - r^2}{\sqrt{N}} = 0.6745 \times \frac{1 - (0.90)^2}{\sqrt{28}} = \pm 0.02.$$

The value for r is positive, which indicates that there is a change in the value of X in the same direction with any change in the value of Y. The absolute value, 0.90, is large, indicating the probability that significant correlation is present. The value for r is 0.90/0.02 or 45 times its probable error, which demonstrates that the correlation coefficient is statistically significant (1, 2, 3, 6, 9).

The regression equation, a linear equation representing the change in one variable corresponding to a unit change in the other, is calculated from the equation

$$Y - Y' = r \frac{\sigma_X}{\sigma_Y} (X - X')$$

in which Y' and X' are the means of the observed values for X and Y. Substitution in this instance gives the equation

$$Y - 110.2 = 0.90 \times \frac{53.7}{57.6} X \ (X - 96.5).$$

This simplifies to

$$Y = 0.84 X + 29.2.$$

In connection with the investigation from which these data were taken, comparisons were also made of the results obtained in the assay of tinctures of digitalis by the M. L. D. frog and the colorimetric methods (8). The correlation coefficient for these determinations was found to be $+0.71 \pm 0.05$. This correlation coefficient is also positive indicating direct relationship. The numerical value is lower, indicating a lower degree of relationship. However, it is 0.71/0.05 or 14 times its probable error, which indicates that it is statistically certain. The regression equation is

$$Y - 194 = 0.71 \times \frac{59.1}{71} \times (X - 147)$$

which simplifies to

$$Y = 0.59 X + 107.4.$$

In determining the relationship between the results of analysis of oil of chenopodium (7) a series of values for r was obtained. It was desired to determine whether these were real or spurious relationships. For this purpose partial correlation coefficients (6, 7, 9, 10) were calculated by the formula

$$r_{12 \cdot 3} = \frac{r_{12} - r_{13} r_{23}}{(1 - r_{13}^2)(1 - r_{23}^2)}$$

in which $r_{12.3}$ represents the correlation between variables 1 and 2 when the effect of variable 3 upon each of them is made constant; r_{12}, r_{23} represent the correlation between the indicated pairs of variables. This same formula may be extended to stabilize the effect of two or more variables in the same way (Table II).

The correlation between ascaridol and specific gravity of oil of chenopodium was found to be 0.89 ± 0.02, which indicates definite relationship. When the rotation or the index of refraction were fixed, values of 0.89 and 0.87 were ob-

tained, showing that these variables had no effect upon the observed relationship. When the alcohol solubility was fixed, the value for r decreased to 0.76, indicating that this variable had an effect upon the observed relationship. The correlation of ascaridol content to alcohol solubility was minus 0.73 and of specific gravity to alcohol solubility was minus 0.74. In other words, about the same degree of relationship was noted between these variables. When the rotation, the index of refraction and the alcohol solubility were all fixed, the correlation between ascaridol content and specific gravity was found to be 0.79. This indicates that the observed correlation is real and not spurious.

TABLE II.—CORRELATION COEFFICIENTS OF OIL OF CHENOPODIUM ASSAYS.

Asc:SpGr	0.89	Asc:Alc/Rot	−0.66
Asc:SpGr/Rot	0.89	Asc:Alc/nD	−0.66
Asc:SpGr/nD	0.87	Asc:Alc/Rot, nD	−0.50
Asc:SpGr/Alc	0.76		
Asc:SpGr/Rot, nD	0.85	SpGr:Rot	−0.60
Asc:SpGr/Rot, Alc	0.80		
Asc:SpGr/nD, Alc	0.77	SpGr:nD	−0.42
Asc:SpGr/Rot, nD, Alc	0.79	SpGr:nD/Rot	−0.69
Asc:Rot	−0.38		
Asc:Rot/SpGr	0.42	SpGr:Alc	−0.74
Asc:Rot/nD	−0.59	SpGr:Alc/Asc	−0.29
Asc:Rot/Alc	−0.33	SpGr:Alc/Rot	−0.77
		SpGr:Alc/nD	−0.67
Asc:nD	−0.40	SpGr:Alc/Rot, nD	−0.61
Asc:nD/SpGr	−0.06		
Asc:nD/Rot	−0.53	Rot:nD	−0.21
Asc:nD/Alc	0.02	Rot:Alc	0.23
Asc:Alc	−0.73	nD:Alc	0.56
Asc:Alc/SpGr	−0.23	nD:Alc/Rot	0.61

Asc represents ascaridol
SpGr represents specific gravity
Rot represents specific rotation
nD represents index of refraction
Alc represents volumes of 70 per cent alcohol for solution.

CONCLUSIONS.

1. The correlation coefficient, r, is a definite statistical measure of the degree of co-relationship.

2. It is only significant of linear correlation.

3. Partial correlation coefficients serve to demonstrate whether an observed relationship is real or is spurious.

BIBLIOGRAPHY.

(1) W. Chauvenet, A treatise on the method of least squares (1868).

(2) C. B. Davenport, Statistical methods, with special reference to biological variation, 3rd Edition (1914).

(3) W. P. Elderton, Frequency curves and correlation.

(4) R. A. Fisher, Statistical methods for research workers, 2nd Edition (1928).

(5) M. Merriman, A textbook on the method of least squares (1913).

(6) James C. Munch, "Bioassays" (1931).

(7) J. C. Munch and W. F. Reindollar, A statistical study of the chemical constants of Oleum Chenopodii, Paper read at Baltimore meeting, A. PH. A., 1930.

(8) L. W. Rowe, The colorimetric assay of strophanthus, JOUR. A. PH. A., 16 (1927), 113–115; The colorimetric assay of digitalis, *Ibid.*, pages 510–516.

(9) K. Pearson, On the criterion that a given system of deviation from the probable in the case of a correlated system of variables is such that it can be reasonably supposed to have arisen from random sampling, *Phil. Mag.*, 5 (1900), 157–175.

(10) H. R. Tolley, The theory of correlation as applied to farm-survey data on fattening baby beef, *U. S. Dept. Agr. Bull.*, 504 (1917).

PROPADIENE.*

BY W. A. LOTT AND W. G. CHRISTIANSEN.

L. K. Riggs predicted that due to the presence of two double bonds in propadiene $CH_2{=}C{=}CH_2$, the gas should have very high anesthetic potency; and that since the molecular weight is low, it should not be highly toxic. His studies indicated that the gas is disappointingly toxic.[1]

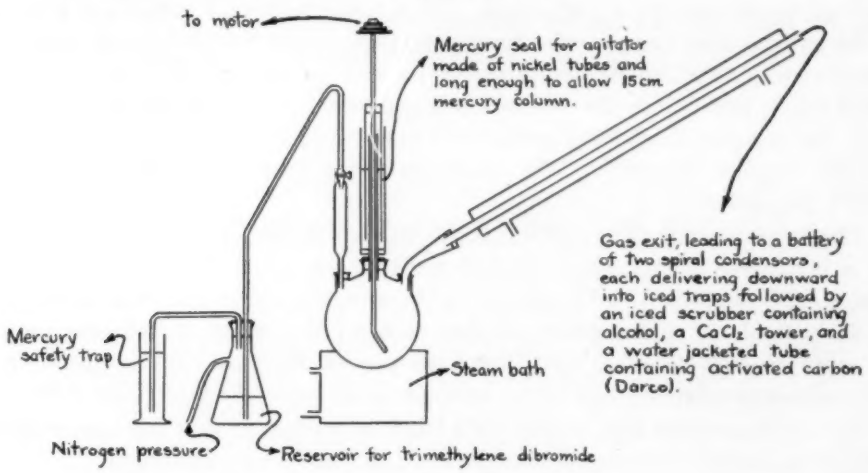

to motor
Mercury seal for agitator made of nickel tubes and long enough to allow 15 cm. mercury column.
Gas exit, leading to a battery of two spiral condensors, each delivering downward into iced traps followed by an iced scrubber containing alcohol, a $CaCl_2$ tower, and a water jacketed tube containing activated carbon (Darco).
Mercury safety trap
Steam bath
Nitrogen pressure
Reservoir for trimethylene dibromide

Fig. 1.

It seemed to the present authors that the method by which the material used in the above work was prepared did not adequately provide for the removal of vapors of 2,3-dibrompropene, and that the violent nervous symptoms noted by Dr. Riggs might be avoided by carefully removing these vapors from the propadiene.

In this laboratory we had already found that when propylene is prepared from propylene dibromide, incomplete removal of the propylene dibromide vapors causes the gas to be less satisfactory for anesthetic purposes. Likewise, in the case of cyclopropane we had much better results from that gas which we had rigidly purified from trimethylene dibromide.

* Scientific Section, A. PH. A., Baltimore meeting, 1930.

[1] *Proc. Soc. Experimental Biology & Medicine*, 22 (1925), 269, and private communications.

Halogen substitution products of aliphatic hydrocarbons are very volatile even at temperatures far below their boiling points, and their vapors cannot be removed from a gas by condensation; especially when that gas is in rapid motion, *i. e.*, when it is being delivered from the apparatus in which it was made. This point is overlooked by many workers and was evidently overlooked by Henderson and Lucas in their recent work with cyclopropane.

In our work with cyclopropane we found that a battery of three spiral condensers above three cold (−15° C.) traps were insufficient to remove the trimethylene dibromide, but that a water jacketed column of activated carbon (Darco) was sufficient to remove every trace of bromide vapor.

We therefore decided to make propadiene in the same apparatus (diagram attached) used for the preparation of cyclopropane.

Two and a half liters of 80% alcohol were introduced into the reaction flask, and 2100 Gm. zinc dust were added to the alcohol, while stirring (to prevent caking). After the alcohol had been brought to boiling, 1381 Gm. of 2,3-dibromopropene were added, slowly and uniformly, through a dropping tube by use of nitrogen pressure, as shown. About 27 gallons of gas were collected by displacement of water, or approximately a 70% yield. This gas was diluted somewhat with air, but the hydrocarbon content was pure propadiene except for some small quantities of methyl acetylene, an isomer probably formed indirectly from propadiene. A sample taken just before the reaction stopped contained 7–8% methyl acetylene, but in the samples used for physiological tests the isomer was present in a considerably smaller quantity. The gases used for anesthetic studies contained 90–95% propadiene.

The brief physiological studies[1] made on this sample of propadiene indicated that it is capable of producing surgical anesthesia in white rats in concentrations between 12% and 25% with practically no irregularity in the respiratory rate, and without alarming depression of that rate. There seems to be some promise that more extensive studies with larger samples of the pure gas may prove it to be a good anesthetic.

No concentrations higher than 25% have been used, so that the concentration at which propadiene becomes definitely toxic has not been established.

The preparation of the 2,3-dibromopropene used for the generation of the propadiene involved (*a*) the preparation and purification of large quantities of tribromopropane by careful bromination of propylene dibromide, (*b*) the laborious preparation of 2,3-dibromopropene therefrom in small batches, by the removal of HBr with KOH, and (*c*) the repeated distillation of the 2,3-dibromopropene. Therefore, it was decided that further physiological studies must await the development of a better method of preparing the gas.

An attempt was made to do this by the dehydration of acetone.

$$\begin{matrix} CH_3 \\ \diagdown \\ \quad CO \\ \diagup \\ CH_3 \end{matrix} \rightleftharpoons CH_2{:}C{:}CH_2 + H_2O$$

[1] By Messrs. H. Holaday and B. L. Thomas of the Biological Laboratories, E. R. Squibb & Sons, New Brunswick, N. J. Not yet published.

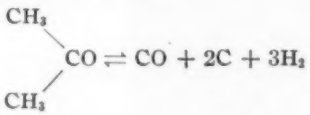
Acetone vapor was passed over pumice impregnated with pyrophosphoric acid, in an iron converter of the usual type, at temperature of 350–375° C. The acetone was recondensed quantitatively at the exit end of the converter and no gaseous product collected. However, when the temperature in the converter was raised gradually to 425–450° C. the evolution of a gaseous product began. At 475° C. no more acetone was condensed and the conversion to the gas was complete.

Analysis of this gas, which was somewhat diluted with air, was as follows:

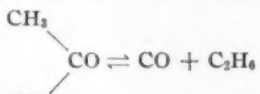
Oxygen	2.6 %
Nitrogen	10.0 %
Carbon dioxide	1.5 %
Carbon monoxide	22.9 %
Hydrogen	59.8 %
Olefin (calculated as ethylene)	1.75%
Saturated hydrocarbon (calculated as ethane)	1.53%

At the conclusion of the experiment, the dehydrating catalyst was interspersed with great quantities of retort carbon.

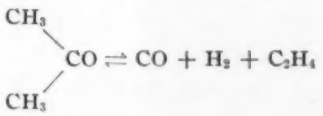
This analysis indicates that the acetone suffers thermal decomposition; probably according to the following equation:



A small portion may have decomposed in the following manner.



And a smaller portion may have decomposed in still another manner.



The work had to be dropped at this point but will be continued again at an early date.

RESEARCH DEPARTMENT OF THE CHEMICAL & PHARMACEUTICAL LABORATORIES,
E. R. SQUIBB & SONS, BROOKLYN, N. Y.

CINCHONA PRODUCTION AND SENNA IMPORTS.

Cinchona bark production in Netherland East Indies increased in 1930 to 11,121,000 kilos, a gain of 481,000 kilos over the 1929 production. Java produced 9,542,000 kilos, while Sumatra produced 1,580,000 kilos. (Trade Commissioner Richard P. Hendren, Batavia.)

Exports of senna from the Sudan for the first 11 months of 1930 aggregated 706 tons as against 552 tons for the corresponding period 1929. Of the 1930 total, 453 tons were shipped to the United States, 193 tons to Great Britain and 60 tons to Egypt. (Assistant Trade Commissioner Gabriel D. Ferrante, Cairo.)

A PHYTOCHEMICAL STUDY OF HYDRASTIS CANADENSIS (GOLDENSEAL).*

BY EDWIN GILLIS** AND H. A. LANGENHAN.***

INTRODUCTION.

The experimental work presented here is a continuation of the investigation begun in 1927, a report of which was presented before the Scientific Section of the AMERICAN PHARMACEUTICAL ASSOCIATION at Portland, Maine, August, 1928, under the title "A Pharmaceutical Study of *Hydrastis Canadensis*,"[1] by Ruby H. Hirose and H. A. Langenhan.

The experimental work included in the above study covered a period of one year. It presented information of value, yet not sufficiently conclusive. It was therefore deemed desirable to continue the investigation of Hydrastis.

Since 1927, seventy-seven samples were obtained from the Skagit Valley Goldenseal Farm and more than 500 assays were made.

For a more accurate assay the plant was divided into the conventional botanical classification of rhizome, root, leaf and stem, and each analyzed separately.

This study attempted to include:

1. A tentative standard of the age and weight relations of the different parts of the plant.
2. Relations of alkaloidal variability among the same parts with respect to age, monthly and seasonal changes.
3. Data on the approximate assays of non-alkaloidal constituents, such as moisture, acid-insoluble ash, acid-soluble ash and total ash, and the relation between the percentage of ether-soluble alkaloid and acid-soluble ash. An additional phase of the study will be the berberine content and its relation to the ether-soluble alkaloids and acid-soluble ash, as these three represent plant constituents.

PREPARATION OF THE SAMPLES.

The underground portion of Hydrastis consists of a root stock or rhizome and roots. The rhizome is the underground stem, but it is often conveniently thought of as a part of the root system because it creeps along the earth and resembles a root in appearance.

The half tone (Plate I) is from a photograph of an underground root system. The rhizome sends out tendrils which produce buds as observed by the white markings. These buds form a rhizome which in turn sends out tendrils which eventually thicken to form a matted mass.

The plants were harvested so as to remove not only the roots, but the rootlets. The weight percentage ratio of rhizome to root will often depend upon the care exerted in removing all the root fibres. Much of the adhering soil was shaken out

---

* Presented before the Scientific Section, AMERICAN PHARMACEUTICAL ASSOCIATION at Baltimore, May 1930.

** Holder of the Skagit Valley Goldenseal Farm Fellowship in Medicinal Plant Cultivation. College of Pharmacy, U. of Washington.

*** Professor of Pharmacy, College of Pharmacy, U. of Washington.

[1] See. JOUR. A. PH. A., 19 (1930), page 349.

and the remainder washed out with a hose or just under the water tap. It was then dried at approximately 95° Fahrenheit for several days, or until the rhizome was quite crisp and broke readily, after which it was weighed, separated into rhizome and root and these portions weighed. These portions were ground separately in a laboratory mill and stored in well-closed containers.

VARIABILITY OF CONVENTIONAL DIVISIONS OF PLANT—THE RELATION BETWEEN THE PERCENTAGE WEIGHT OF ROOT AND RHIZOME IN PLANTS OF DIFFERENT AGE.

For this particular phase of the study, forty-seven representative samples of Hydrastis were harvested. They included plants from 2 to 14 years of age. The weight of the samples varied; from that grown on four square feet of ground, approximating 150 to 500 Gm., depending on the age, to 25 pounds of drug.

Table I is explanatory without discussion. However, to fully appreciate the significance of this and all other tables, accompanying graphs were made, the original size having been 10 x 20 inches. These were photographically reduced to 5 x 7 inches. Otherwise, quite distinctive variations would be overlooked for want of magnification.

The alkaloidal content of the rhizome is greater than that of the root, hence a greater percentage weight of rhizome is desirable; although this is not always applicable. There is approximately a difference of 1 per cent ether-soluble extract between rhizome and root.

With a few exceptions, the percentage weights of rhizome and root are fairly constant. The general average was 28.1 per cent rhizome and 71.9 per cent root. Several groups may be set forth for consideration.

Plate I.—Root system of Hydrastic (Goldenseal). 12-inch ruler for comparison. The dried rhizome and root of Hydrastis Canadensis, *Ranunculaceae*.

PERCENTAGE WEIGHT OF RHIZOME FROM PLANTS OF DIFFERENT AGE.

Age.	Weight per cent, rhizome.
2	20.60
3	24.75
4	20.30
5	25.90
6	29.80

The results represent the average for plants of the same age in years, irrespective of the date (year) collected.

PERCENTAGE WEIGHT OF RHIZOME COLLECTED FROM THE SAME PLOT TWO CONSECUTIVE YEARS.

Stock no.	Age.	Year.	Per cent weight, rhizome.
6	4	1927	16.7
30	5	1928	26.4

PERCENTAGE WEIGHT OF RHIZOME OF PLANTS REPRESENTING MAXIMUM PERCENTAGE.

Stock no.	Age.	Month.	Year.	Per cent weight, rhizome.
32	3	Sept.	1928	38.8
66	6	Sept.	1929	42.5
73	6	Oct.	1929	43.7
77	6	Nov.	1929	39.3

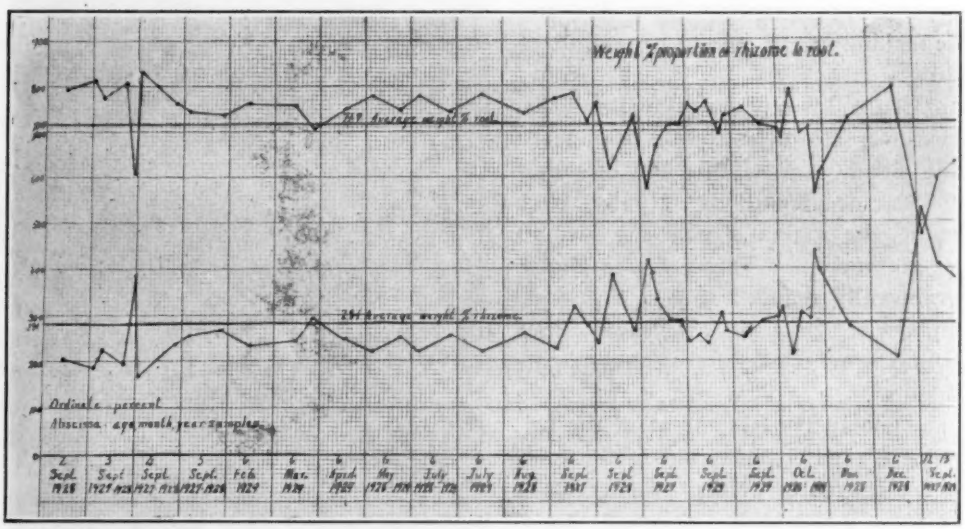


Chart 1.—Weight percentage proportion of rhizome to root for plants varying in age from 2-14 years, harvested 1927, 1928, 1929.

	Rhizome.	Root.
Maximum	52.8	83.3
Average	28.1	71.9
Minimum	16.7	47.2

PERCENTAGE WEIGHT OF RHIZOME FROM PLANTS COLLECTED FROM THE SAME PLOT FOR THREE CONSECUTIVE YEARS.

Stock no.	Age.	Month.	Year.	Per cent weight, rhizome.
7	12	Sept.	1927	52.8
27	13	Sept.	1928	40.8
(b, d.) 68	14	Sept.	1929	37.2

No definite conclusion may be reached from the data compiled so far. The high percentage weight of the last group may be accounted for by the fact that it was impossible to dig up all the roots and rootlets belonging to the plant. The mass of rhizome and roots was about six inches deep, and was cut out of the solid bed.

Neither age nor seasonal effects manifest themselves consistently. Undoubtedly soil and climate conditions, from the time the seed is planted up to the time of harvest, as well as hereditary properties, influence the percentage weight.

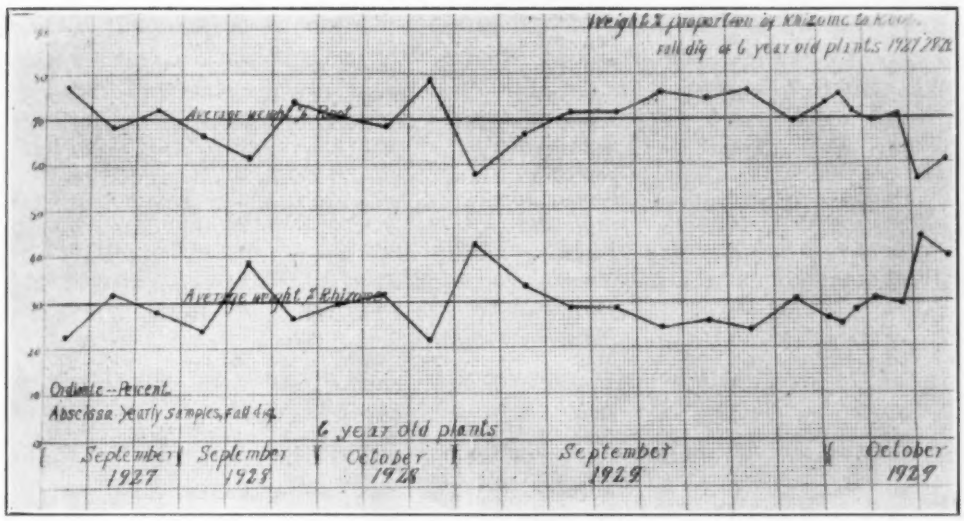


Chart 2.—Weight percentage proportion of rhizome to root of six-year-old plants for the years 1927, 1928, 1929.

	Rhizome.	Root.
Maximum	43.7	56.3
Average	29.8	70.2
Minimum	21.2	56.3

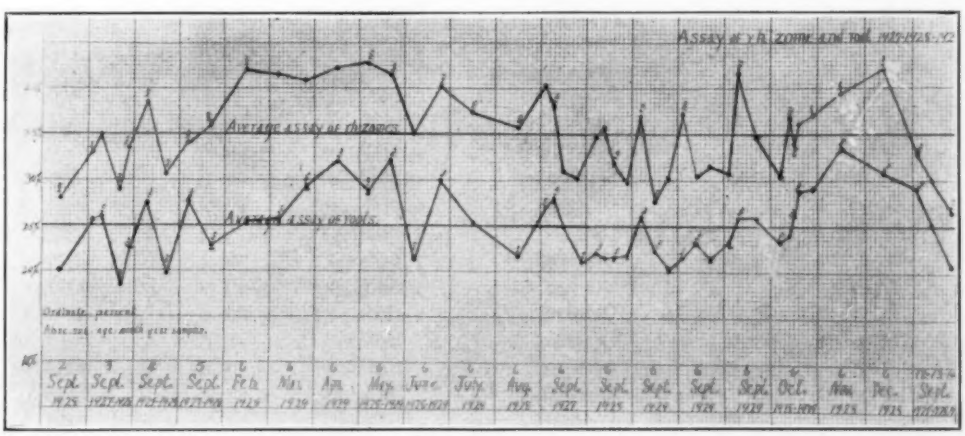


Chart 3.—The percentage of ether-soluble alkaloids of the rhizome and root from plants varying in age from 2–14 years.

	Rhizome.	Root.
Maximum	3.38	4.29
Average	2.50	3.50
Minimum	1.86	2.50

TABLE I.—WEIGHT PERCENTAGE PROPORTION OF RHIZOME TO ROOT FOR PLANTS VARYING IN AGE FROM 2–14 YEARS, HARVESTED 1927, 1928, 1929.

Stock no.	Age.	Month.	Year.	Weight per cent, rhizome.	Weight per cent, root.
33	2	September	1928	20.6	79.4
1	3	September	1927	18.6	81.4
5	3	September	1927	22.3	77.7
35	3	September	1928	19.4	80.6
32	3	September	1928	38.8	61.2
6	4	September	1927	16.7	83.3
31	4	September	1928	23.9	76.1
2	5	September	1927	25.5	74.5
30	5	September	1928	26.4	73.6
53	6	February	1929	23.8	76.2
52	6	March	1929	24.3	75.7
54	6	March	1929	29.2	70.8
55	6	April	1929	24.7	75.3
56	6	May	1929	22.1	77.9
36	6	May	1928	25.3	74.7
37	6	June	1928	22.1	77.9
58	6	June	1929	25.5	74.5
60	6	July	1929	22.0	78.0
39	6	August	1928	26.0	74.0
4	6	September	1927	22.7	77.3
3	6	September	1927	31.9	68.1
22	6	September	1927	27.8	72.2
28	6	September	1928	23.8	76.2
38	6	September	1928	26.4	73.6
66	6	September	1929	42.5	57.5
67	6	September	1929	33.2	66.8
70	6	September	1929	28.7	71.3
65N	6	September	1929	28.6	71.4
65J	6	September	1929	24.1	75.9
65I	6	September	1929	25.8	74.2
65A	6	September	1929	23.9	76.1
65C	6	September	1929	30.5	69.5
65G	6	September	1929	26.6	73.4
65D	6	September	1929	25.0	75.0
65L	6	September	1929	28.8	71.2
40	6	October	1928	29.6	70.4
41	6	October	1928	31.6	68.4
42	6	October	1928	21.2	78.8
72A	6	October	1929	30.6	69.4
72C	6	October	1929	29.1	70.9
73	6	October	1929	43.7	56.3
77	6	October	1929	39.5	60.5
46	6	November	1928	27.2	72.8
48	6	December	1928	20.7	79.3
7	12	September	1927	52.8	47.2
27	13	September	1928	40.8	59.2
68DB	14	September	1929	37.2	62.8
		Minimum		16.7	47.2
		Average		28.1	71.9
		Maximum		52.8	83.3

WEIGHT PERCENTAGE PROPORTION OF RHIZOME TO ROOT OF SIX-YEAR-OLD PLANTS FOR THE YEARS 1927, 1928, 1929.

It is of interest to the grower to know approximately the proportion of rhizome to root; likewise, the average yield per given area for 3-, 4-, 5-year-old plants. However, the producer is immediately interested to know whether his harvested crop is average or above average, in accordance with certain standards.

Table II is the weight percentage proportion of rhizome to root of six-year-old plants harvested during the years 1927, 1928 and 1929.

The average weight percentage of rhizome for 1927 samples is 27.5.
The average weight percentage of rhizome for 1928 samples is 28.6.
The average weight percentage of rhizome for 1929 samples is 30.7.

The composite average for all samples for the three successive years is 29.8. Thus, from a study of the 24 samples it may be assumed that approximately 30 per cent is an average yield for the percentage of rhizome.

With the exception of the several samplings which approached a 40 per cent yield of rhizome, the variation for the percentage of rhizome from the line of averages is slight.

TABLE II.—WEIGHT PERCENTAGE PROPORTION OF RHIZOME TO ROOT OF SIX-YEAR-OLD PLANTS FOR THE YEARS 1927, 1928, 1929.

Stock no.	Age.	Month.	Year.	Weight per cent, rhizome.	Weight per cent, root.
4	6	September	1927	22.7	77.3
3	6	September	1927	31.9	68.1
22	6	September	1927	27.8	72.2
28	6	September	1928	23.8	66.2
32	6	September	1928	38.8	61.2
38	6	September	1928	26.4	73.6
40	6	October	1928	29.6	70.4
41	6	October	1928	31.6	68.4
42	6	October	1928	21.2	78.8
66	6	September	1929	42.5	57.5
67	6	September	1929	33.2	66.8
70	6	September	1929	28.7	71.3
65N	6	September	1929	28.6	71.4
65J	6	September	1929	24.1	75.9
65I	6	September	1929	25.8	74.2
65A	6	September	1929	23.9	76.1
65C	6	September	1929	30.5	69.5
65G	6	September	1929	26.6	73.4
65D	6	September	1929	25.0	75.0
65L	6	September	1929	28.8	71.2
72A	6	October	1929	30.6	69.4
72C	6	October	1929	29.1	70.9
73	6	October	1929	43.7	56.3
77	6	October	1929	39.5	60.5
		Maximum		43.7	56.3
		Average		29.8	70.2
		Minimum		21.2	56.3

SUMMARY.

The weight percentage distribution for rhizome for all three years is as follows:

Minimum weight percentage for rhizome is 21.2.
Average weight percentage for rhizome is 29.8.
Maximum weight percentage for rhizome is 43.7.

The distribution for root:

Minimum weight percentage for root is 57.5.
Average weight percentage for root is 70.2.
Maximum weight percentage for root is 78.8.

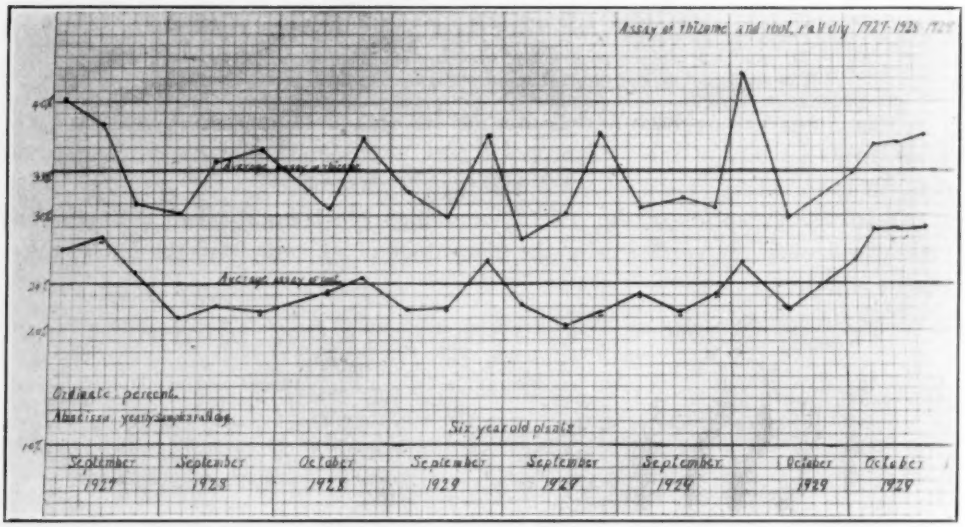


Chart 4.—The percentage of ether-soluble alkaloids of rhizome and root of fall harvest plants for the years 1927, 1928, 1929.

	Rhizome.	Root.
Maximum	2.89	4.25
Average	2.40	3.39
Minimum	2.03	2.77

ALKALOIDAL VARIABILITY—ASSAY.

The United States Pharmacopœia method of assay was followed.

Ten grams of the powdered drug were transferred to an Erlenmeyer flask. To this were added 100 cc. of ether and the mixture allowed to stand five minutes, then adding 10 cc. of a 10 per cent solution of ammonia water. The containers were placed in a mechanical shaker, agitated for two hours and allowed to stand over night. After again agitating for half an hour, 50 cc. of the ether solution were measured into a separatory funnel. The ether solution was extracted with successive portions of

20 cc. of 5% sulphuric acid
15 cc. of 1.5% sulphuric acid
10 cc. of 1.0% sulphuric acid
10 cc. of 1.0% sulphuric acid

Lugol's solution was used to test for the complete removal of alkaloidal salts from the ether-soluble extract.

The acid solution was made faintly alkaline with stronger ammonia water and allowed to cool before shaking out with ether. The following proportions of ether were used successively:

20 cc. ether
15 cc. ether
10 cc. ether
10 cc. ether

The acid solution was then tested with Lugol's solution for absence of alkaloid.

The ether was allowed to evaporate spontaneously and the residue then dried at 100° C.

THE PERCENTAGE OF ETHER-SOLUBLE ALKALOIDS OF THE RHIZOME AND ROOT FROM PLANTS VARYING IN AGE FROM 2–14 YEARS.

Table III summarizes the ether-soluble alkaloidal content of the root and rhizomes of plants varying in age from 2–14 years.

By a study of Chart 3 the tendency of an increase of alkaloidal content of rhizome followed by an increase of alkaloidal content of root becomes quite apparent. Of the forty-six samples studied in this group, thirty-two samples complied with this.

TABLE III.—THE PERCENTAGE OF ETHER-SOLUBLE ALKALOIDS OF THE RHIZOME AND ROOT FROM PLANTS VARYING IN AGE FROM 2–14 YEARS.

Stock no.	Age.	Month.	Year.	Root.	Rhizome.
33	2	September	1928	2.08	2.83
1	3	September	1927	2.56	3.30
5	3	September	1927	2.60	3.50
35	3	September	1928	1.86	2.93
32	3	September	1928	2.25	3.34
6	4	September	1927	2.75	3.86
31	4	September	1928	1.98	3.07
2	5	September	1927	2.77	3.40
30	5	September	1928	2.28	3.58
53	6	February	1929	2.54	4.21
52	6	March	1929	2.57	3.15
54	6	March	1929	2.94	4.18
55	6	April	1929	3.20	4.21
56	6	May	1929	2.88	4.29
36	6	May	1928	3.22	4.14
37	6	June	1928	2.13	2.50
58	6	June	1929	3.00	4.02
60	6	July	1929	2.53	3.73
39	6	August	1928	2.16	3.57
4	6	September	1927	2.70	4.03
3	6	September	1927	2.80	3.80
22	6	September	1927	2.50	3.10
28	6	September	1928	2.10	3.02
29	6	September	1928	2.20	3.48
38	6	September	1928	2.15	3.57
66	6	September	1929	2.16	3.20
67	6	September	1929	2.18	2.99
70	6	September	1929	2.60	3.70
65N	6	September	1929	2.21	2.77
65J	6	September	1929	2.034	3.02

Table III.—*Concluded.*

Stock no.	Age.	Month.	Year.	Root.	Rhizome.
65I	6	September	1929	2.15	3.72
65A	6	September	1929	2.31	3.06
65C	6	September	1929	2.15	3.15
65G	6	September	1929	2.32	3.06
65D	6	September	1929	2.59	4.25
65L	6	September	1929	2.19	2.97
41	6	September	1928	2.33	3.05
42	6	September	1928	2.44	3.67
72A	6	September	1929	2.61	3.38
72C	6	September	1929	2.89	3.61
73	6	September	1929	2.88	3.63
77	6	November	1929	2.90	3.90
46	6	November	1928	3.38	3.94
48	6	December	1928	3.08	4.20
7	12	September	1927	2.90	3.29
27	13	September	1928	2.50	3.00
68DB	14	September	1929	2.06	2.65
		Maximum		3.38	4.29
		Average		2.50	3.50
		Minimum		1 86	2.50

TABLE IV.—THE PERCENTAGE OF ETHER-SOLUBLE ALKALOIDS OF RHIZOME AND ROOT OF FALL HARVEST PLANTS FOR THE YEARS OF 1927, 1928, 1929.

Stock no.	Age.	Month.	Year.	Assay, root.	Assay, rhizome.
4	6	September	1927	2.70	4.03
6	6	September	1927	2.80	3.80
22	6	September	1927	2.50	3.10
28	6	September	1928	2.10	3.02
29	6	September	1928	2.20	3.48
38	6	September	1928	2.15	3.57
41	6	October	1928	2.33	3.05
42	6	September	1928	2.44	3.67
66	6	September	1929	2.16	3.20
67	6	September	1929	2.18	2.99
70	6	September	1929	2.60	3.70
65N	6	September	1929	2.21	2.77
65J	6	September	1929	2.03	3.02
65I	6	September	1929	2.15	3.72
65A	6	September	1929	2.31	3.06
65C	6	September	1929	2.15	3.15
65G	6	September	1929	2.32	3.06
65D	6	September	1929	2.39	4.25
65L	6	September	1929	2.19	2.97
72A	6	October	1929	2.61	3.38
72C	6	October	1929	2.89	3.61
73	6	October	1929	2.88	3.63
		Maximum		2.89	4.25
		Average		2.40	3.39
		Minimum		2.03	2.77

NOTE: According to Table III (Chart 3) the average for the rhizome is 3.50% and for the root 2.50%. This might indicate that September is not a desirable month for harvesting in this region.

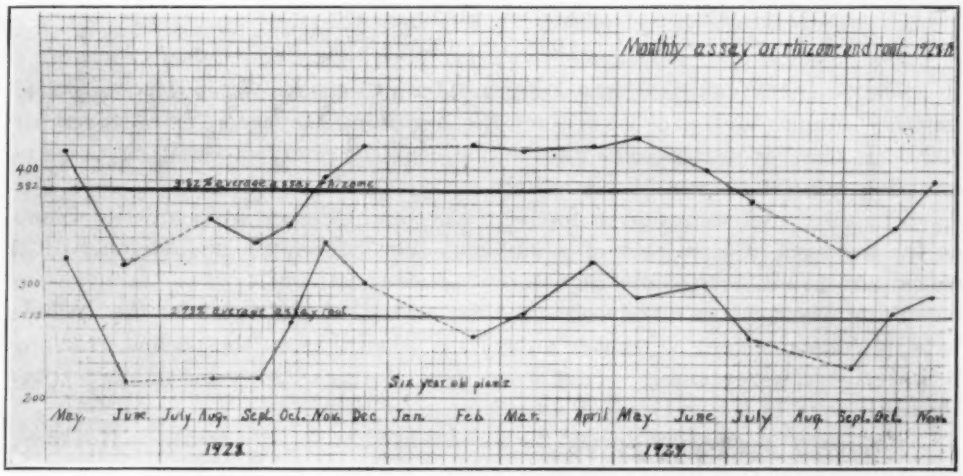

Monthly assay of rhizome and root. 1928-9
400
3.32% average assay rhizome
300
2.73% average assay root
200
Six year old plants
May. June. July. Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. April May. June. July. Aug. Sept. Oct. Nov.
1928.
1929.

Chart 5.—Monthly assay of rhizome and root (1928 and 1929).

	Rhizome.	Root.
Maximum	4.29	3.38
Average	2.83	2.73
Minimum	3.15	2.13

These samples were obtained from the same plot. July for 1928 and January and August for 1929 are missing.

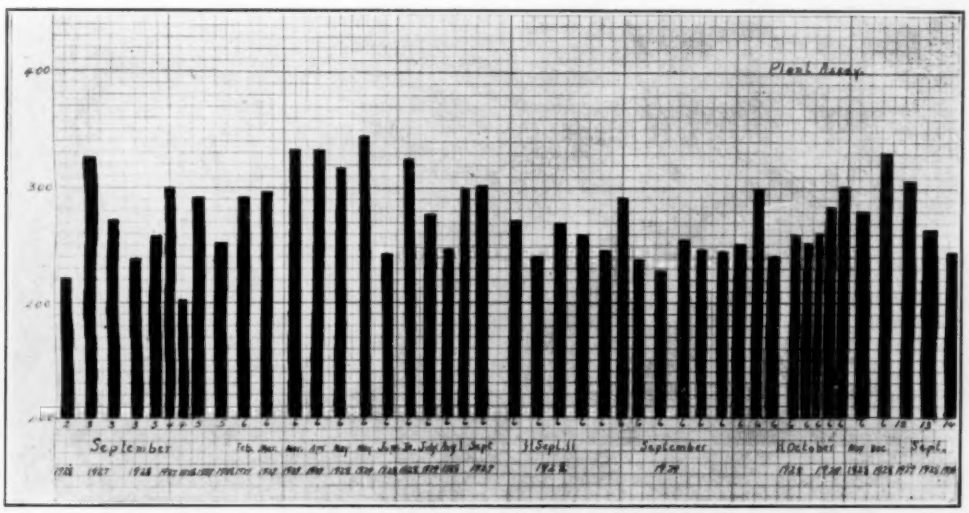


Chart 6.—Alkaloidal content of plant (rhizome and root).

Maximum	3.45%
Average	2.82%
Minimum	2.22%

MONTHLY ASSAY OF RHIZOME AND ROOT (1928 AND 1929).

The Skagit Valley Goldenseal Farm, Mount Vernon, Washington, supplied monthly samples for this phase of the work, beginning May 1928, until November 1929. It was hoped that some information could be obtained from this range of sampling, relative to monthly variations.

The alkaloidal values given for September and October are composite values or the averages of a number of samplings. For September and October 1929 eleven and five different samplings were made, respectively.

From Chart 5 it is readily observed that the alkaloidal value for the rhizome is fairly constant from November until June, when it is on the decline, reaching its lowest level in September. It increases again during October and finally reaches the same value in November 1929 as in November 1928.

The assay of the root during the same period is slightly erratic. However, the curve for the root follows the same general tendency of the rhizome from June when it is on the decline until it reaches its lowest level in September and then it is on the incline during the months of October and November.

Chart 5 includes additional sampling, covering the period from May until November 1928. The assay is high in May, declining until September when it is on the increase in October and November. The sampling for May in both years is high.

TABLE V.—MONTHLY ASSAY OF RHIZOME AND ROOT (1928 AND 1929).

Stock no.	Age.	Month.	Year.	Assay, root.	Assay, rhizome.
36	6	May	1928	3.22	4.14
37	6	June	1928	2.13	3.15
39	6	August	1928	2.16	3.57
38	6	September	1928	2.15	3.36
Comp.	6	October	1928	2.68	3.51
46	6	November	1928	3.38	3.94
48	6	December	1928	3.08	4.20
53	6	February	1929	2.54	4.21
52–54	6	March	1929	2.75	4.16
55	6	April	1929	3.20	4.21
56	6	May	1929	2.88	4.29
58	6	June	1929	3.00	4.02
60	6	July	1929	2.53	3.73
Comp.	6	September	1929	2.26	3.26
Comp.	6	October	1929	2.75	3.50
77	6	November	1929	2.90	3.90
		Maximum		3.38	4.29
		Average		2.73	3.82
		Minimum		2.13	3.15

THE ALKALOIDAL (ETHER-SOLUBLE) CONTENT OF HYDRASTIS (RHIZOME AND ROOT), FROM PLANTS VARYING FROM 2–14 YEARS FOR 1927, 1928, 1929.

It is difficult to obtain representative samples for an assay by grinding up the whole root system. The proportion of rhizome or root may vary, depending upon the method used in collecting the sample, as can be seen by referring to Tables II and III.

A more satisfactory method is to carefully divide the root system into root and rhizome. Weigh and assay these separately, and from the results obtained compute the alkaloidal content of the drug as marketed. The results recorded in Tables VI and VII were so obtained.

TABLE VI.—ALKALOIDAL CONTENT OF THE PLANT (RHIZOME AND ROOT).

Stock no.	Age.	Month.	Year.	U. S. P. method, % alkaloids.
33	2	September	1928	2.22
1	3	September	1927	3.27
5	3	September	1927	2.73
35	3	September	1928	2.38
32	3	September	1928	2.57
6	4	September	1927	3.00
31	4	September	1928	2.22
2	5	September	1927	2.91
30	5	September	1928	2.52
53	6	February	1929	2.94
52	6	March	1929	2.95
54	6	March	1929	3.30
55	6	April	1929	3.33
56	6	May	1929	3.19
36	6	May	1928	3.45
37	6	June	1928	2.43
58	6	June	1929	3.26
60	6	July	1929	2.79
39	6	August	1928	2.47
4	6	September	1927	3.00
3	6	September	1927	3.12
22	6	September	1927	2.71
28	6	September	1928	2.41
29	6	September	1928	2.69
66	6	September	1929	2.60
67	6	September	1929	2.45
70AB	6	September	1929	2.93
65N	6	September	1929	2.38
65J	6	September	1929	2.28
65IO	6	September	1929	2.56
65AB	6	September	1929	2.48
65CE	6	September	1929	2.46
65GH	6	September	1929	2.51
65DF	6	September	1929	3.00
65LM	6	September	1929	2.42
40	6	October	1928	2.60
41	6	October	1928	2.53
42	6	October	1928	2.63
72AD	6	October	1929	2.85
72GB	6	October	1929	3.11
46	6	November	1928	2.80
48	6	December	1928	3.31
7	12	September	1927	3.08
27	13	September	1928	2.65
68	14	September	1929	2.44
	Maximum alkaloidal content of plant			3.45
	Average alkaloidal content of plant			2.82
	Minimum alkaloidal content of plant			2.22

As an experiment, the method of representing the quantities in the chart was changed from the conventional curve to a block system as illustrated by Charts 6 and 7.

THE ABSOLUTE ALKALOIDAL (ETHER-SOLUBLE) CONTENT OF HYDRASTIS (RHIZOME AND ROOT).

Two factors that influence the alkaloidal content of Hydrastis are the acid-insoluble ash (sand and the like) and the moisture content. Both were determined and the "absolute" alkaloidal content of the samples in Table VIII was computed and recorded in Table VII (Chart 7).

TABLE VII.—THE ABSOLUTE ALKALOIDAL (ETHER-SOLUBLE) CONTENT OF HYDRASTIS (RHIZOME AND ROOT).

Stock no.	Age.	Month.	Year.	% alkaloids.
33	2	September	1928	2.37
1	3	September	1928	3.41
5	3	September	1927	2.89
35	3	September	1928	2.61
32	3	September	1928	2.85
6	4	September	1927	3.13
31	4	September	1928	2.34
2	5	September	1927	3.06
30	5	September	1928	2.77
53	6	February	1929	3.14
52	6	March	1929	3.19
54	6	March	1929	3.68
55	6	April	1929	3.73
56	6	May	1929	3.57
36	6	May	1929	3.65
37	6	June	1928	2.69
58	6	June	1929	3.59
60	6	July	1929	3.01
39	6	August	1928	2.79
4	6	September	1927	3.19
3	6	September	1927	3.32
22	6	September	1927	2.85
28	6	September	1928	2.71
29	6	September	1928	2.95
66	6	September	1929	3.13
67	6	September	1929	2.71
70AB	6	September	1929	3.29
65N	6	September	1929	2.69
65J	6	September	1929	2.51
65IO	6	September	1929	2.79
65AB	6	September	1929	2.73
65CE	6	September	1929	2.79
65GA	6	September	1929	2.73
65DE	6	September	1929	3.20
65LM	6	September	1929	2.65
40	6	October	1928	2.90
41	6	October	1928	2.81
42	6	October	1928	2.95
72AD	6	October	1929	3.21
72CB	6	October	1929	3.45

Stock no.	Age.	Month.	Year.	% alkaloids.
73	6	October	1929	
77	6	November	1929	
46	6	November	1928	3.10
48	6	December	1928	3.52
7	6	September	1927	3.27
27	6	September	1928	2.92
68	6	September	1929	2.69
		Maximum		3.73
		Average		3.01
		Minimum		2.34

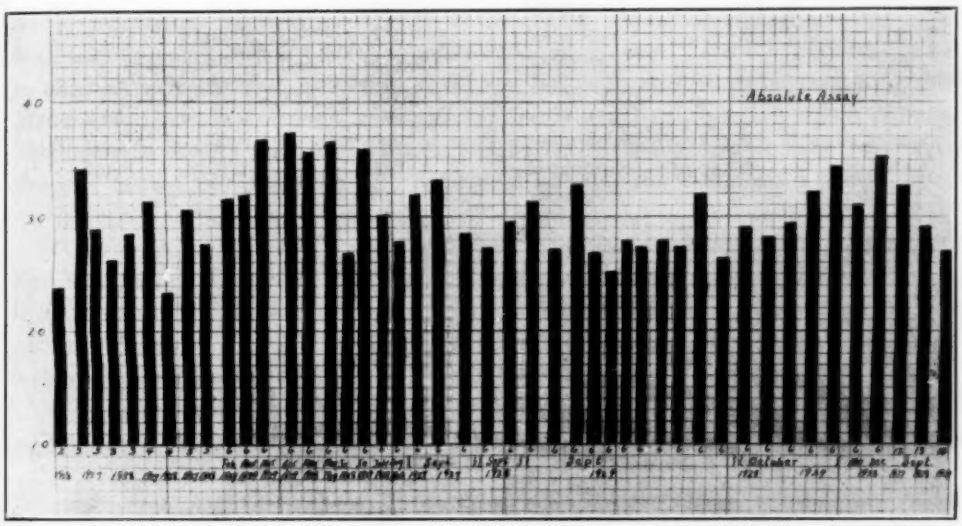


Chart 7.—The absolute alkaloidal (ether-soluble) content of hydrastis (rhizome and root).

	Rhizome.
Maximum	3.73%
Average	3.01%
Minimum	2.34%

TABLE VIII.—A COMPARISON OF UNITED STATES PHARMACOPŒIAL AND ABSOLUTE ASSAYS (TABLES VI AND VII COMBINED).

Stock no.	Age.	Month.	Year.	U. S. P. assay.	Absolute assay.
33	2	September	1928	2.22	2.37
1	3	September	1927	3.27	3.41
5	3	September	1927	2.73	2.89
35	3	September	1928	2.38	2.61
32	3	September	1928	2.57	2.85
6	4	September	1927	3.00	3.13
31	4	September	1928	2.22	2.34
2	5	September	1927	2.91	3.06
30	5	September	1928	2.52	2.77
53	6	February	1929	2.94	3.14
52	6	March	1929	2.95	3.19
54	6	March	1929	3.30	3.68
55	6	April	1929	3.33	3.73

Table VIII.—*Concluded.*

Stock no.	Age.	Month.	Year.	U. S. P. assay.	Absolute assay.
56	6	May	1929	3.19	3.57
36	6	May	1928	3.45	3.65
37	6	June	1928	2.43	2.69
58	6	June	1929	3.26	3.59
60	6	July	1929	2.79	3.01
39	6	August	1928	2.47	2.79
4	6	September	1927	3.00	3.19
3	6	September	1927	3.12	3.32
22	6	September	1927	2.71	2.85
28	6	September	1928	2.41	2.71
29	6	September	1928	2.69	2.95
66	6	September	1929	2.60	3.12
67	6	September	1929	2.45	2.71
70AB	6	September	1929	2.93	3.29
65N	6	September	1929	2.38	2.69
65JK	6	September	1929	2.28	2.51
65IO	6	September	1929	2.56	2.79
65AB	6	September	1929	2.48	2.73
65CE	6	September	1929	2.46	2.79
65GH	6	September	1929	2.51	2.73
65DF	6	September	1929	3.00	3.20
65LM	6	September	1929	2.42	2.65
40	6	October	1928	2.60	2.90
41	6	October	1928	2.53	2.81
42	6	October	1928	2.63	2.95
72AD	6	October	1929	2.85	3.21
72CB	6	October	1929	3.11	3.45
73	6	October	1929		
77	6	October	1929		
46	6	November	1928	2.80	3.10
48	6	December	1928	3.31	3.52
7	12	September	1927	3.08	3.27
27	13	September	1928	2.65	2.92
68	14	September	1929	2.44	2.69
		Maximum		3.45	3.73
		Average		2.82	3.01
		Minimum		2.22	2.34

(*To be continued*)

A PHYTOCHEMICAL AND PHARMACOLOGICAL STUDY OF MITCHELLA REPENS (LINNÉ), N. F. V.*

BY W. PAUL BRIGGS.**

The experimental research here reported was undertaken with the intention of determining the active constituents, if any, contained in the drug, *Mitchella repens*, Linné.

* From the laboratory of Glenn L. Jenkins, Professor of Pharmaceutical Chemistry, University of Maryland, School of Pharmacy.

** Associate Professor of Pharmacy, The George Washington University, School of Pharmacy.

Mitchella is indigenous to the United States and grows principally in woods and swampy places. It flowers in June and July, produces a bright scarlet berry, and its leaves, which resemble clover, remain green through the winter. Mitchella is also known as Squaw Vine (N. F. V), Twin Berry, Partridgeberry, Checkerberry, Winter Clover and Squaw Berry. The generic name *Mitchella* was given in honor of Dr. John Mitchell, a botanist of Virginia (1).

Millspaugh (2) states that it was one of the many plants used by the American Aborigines as a parturient. King (3) strongly recommended the drug as a parturient, diuretic and astringent and further stated that it was highly beneficial in amenorrhea, some forms of dysmenorrhea, menorrhagia, chronic congestion of the uterus, enfeebled uterine nervous system, etc. Most of the current works on Materia Medica arbitrarily classify it as useful in various uterine conditions. Kraemer (1) says that it is astringent, tonic and diuretic; Lynn (4) reports that it is used as an alterative in scrofula and rheumatism, mild diuretic and antiseptic and is often substituted for *Chimaphila*. Youngken (5) states that it is a diuretic, astringent and tonic; Rusby, Bliss and Ballard (6) that it is an uterine tonic and a diuretic acting like buchu, while Mansfield (7) reports that it is a diuretic and emmenagogue.

Numerous constituents have been reported, such as: Kraemer (1) saponin-like body, gum, sugar, wax and resin; Youngken (5) saponin-like compound, resin, mucilage, wax and dextrin; Rusby, Bliss and Ballard (6) resin, wax and a glucoside of the saponin group; Mansfield (7) bitter principle and a saponin-like substance. Breneiser (8) reported definitely the presence of saponin.

Since the investigation of the plant indicates, at least from a laboratory standpoint, that the drug possesses little value as a therapeutic agent, the findings will be reported as briefly as possible.

The average moisture content, determined by the Xylene Method, was found to be 10.16%, the average ash 6.17%, and acid-insoluble ash 2.22%. The qualitative examination of the ash showed that it contained the following inorganic constituents; iron, magnesium, aluminum, sodium, potassium and calcium sulphate, carbonate, chloride, phosphate and oxalate. Formic acid was identified in the distillate from the petroleum benzin extractive.

Complete extraction of 25 Gm. of the air-dried drug in a Soxhlet extractor with the following solvents successively yielded the results reported below:

Petroleum benzin	1.48% extractive
Ether	1.48% extractive
Chloroform	1.65% extractive
Ethyl acetate	2.44% extractive
Alcohol	7.37% extractive
Water	18.20% extractive

Continuous percolation of 2500 Gm. of the drug taken from a 25-pound lot with 95% alcohol until extraction was complete, upon subsequent evaporation, yielded 416.0 Gm. of syrupy extract. An alcoholic solution of 50 Gm. of this extract, poured into water, yielded 7.50 Gm. of resin. This resin had a saponification value of about 177, an acid number of about 45, and an ester number of about 133 when determined by the U. S. P. X methods.

A thorough examination of the extractive for alkaloidal and glucosidal constituents yielded negative results in every instance.

Repeated tests failed to confirm the presence of saponins reported by other investigators. Aqueous extracts of the drug do not produce hemolysis, but they do foam after standing at least 24 hours. Even after standing, however, the extracts do not produce hemolysis and the presence of saponin could not be established. The presence of reducing sugars, tannins, starches, waxes, fats and 4.89% of protein was established, in addition to an unidentified enzyme. Korsakoff (9) considers that the foaming after standing may be due to the action of this enzyme upon a sapongenin present, but all tests failed to reveal the presence of a sapogenin.

Steam distillation yielded an aromatic substance having a faint tobacco-like odor, but the substance was present in such minute quantities that it could not be isolated. The distillate gave negative tests with all alkaloidal reagents.

Pharmacological experiments performed by Professor Marvin R. Thompson gave results as follows: 1. Aqueous extracts representing 1 Gm. of drug per cc. in doses of 0.5 cc. per Kg. body weight administered intravenously to two anesthetized dogs three times at two-hour intervals produced no pressor activity. Three successive doses of 1 cc. per Kg. body weight of the aqueous extract administered orally to two dogs at one-hour intervals caused no pressor effect. Repetition of these tests using a dealcoholized fluidextract also produced no effect. 2. Both the alcoholic and aqueous extracts in concentrations of 1 cc. in a 100-cc. chamber caused no effect on the isolated uteri of rabbits and guinea pigs. 3. The syrupy liquid extractive in doses of 2 cc. per Kg. body weight caused no catharsis or other observable action when administered orally to cats. No effect was observable when the resin in doses of 0.5 Gm. per Kg. body weight was administered orally to cats.

CONCLUSION.

The results of this investigation indicate that *Mitchella* does not contain a saponin, as has been reported, or any other constituent which would cause the therapeutic action ascribed to this drug in the literature.

BIBLIOGRAPHY.

(1) Kraemer, "Scientific and Applied Pharmacognosy" (1928), 758.
(2) Millspaugh, "Medicinal Plants," Vol. I (1892), 77.
(3) King, "American Dispensatory," 10th Edition (1873), 526.
(4) Lynn, "Pharmaceutical Therapeutics" (1929), 194.
(5) Youngken, "Text Book of Pharmacognosy," 3rd Edition (1930), 680.
(6) Rusby, Bliss, Ballard, "Properties and Uses of Drugs" (1930), 344.
(7) Mansfield, "Materia Medica and Pharmacognosy" (1926), 287.
(8) Edgar Breneiser, *Am. J. Pharm.*, 59 (1887), 228.
(9) Korsakoff, *Compt. rend.*, 155 (1912), 844.

UNIVERSITY OF FLORIDA RHO CHI.

At the annual banquet of the Iota Chapter of Rho Chi, national honorary pharmaceutical fraternity, honorary membership was conferred upon W. M. Hankins of Daytona Beach, F. H. Groover and W. D. Jones of Jacksonville.

SOLUBILITY DETERMINATIONS OF U. S. P. CHEMICALS.

BY W. SCHNELLBACH AND J. ROSIN.[1]

SOLUBILITY OF SODIUM BIPHOSPHATE IN WATER AT 25° C.

The sodium biphosphate (sodium phosphate monobasic) used in this determination was of U. S. P. quality. Solutions were prepared by the undersaturation and the supersaturation method. The amount of salt dissolved was determined first by evaporating the solution and drying the residue at 110° C. to constant weight, and, second, after the residue was dried to constant weight, by igniting it to metaphosphate. When the residue was dried at 110° C. a crust was formed which prevented the complete evaporation of the adhering water. Even after drying for several weeks, the results were still somewhat higher than those obtained on ignition.

A check test was run to determine the loss of weight of the official salt on drying at 110° C. The U. S. P. requires that the sodium biphosphate loses not more than 15% of weight on drying at 100° C. This corresponds to approximately one mol of water of crystallization. Theoretically this monohydrated salt contains 13.05% water of crystallization, the U. S. P. giving a leeway of about 2% more moisture. The anhydrous salt should lose upon ignition an additional mol of water of constitution, making a total of 26.10%. The sample used for the experiment lost at 110° C. 13.6% and upon ignition suffered a further loss of 14.9%, making a total of 28.5%.

Sodium biphosphate crystallizes also with two mols of water (23.09%). It was of interest to know which of the hydrates is in equilibrium with water at 25° C. The excess of solute in the saturated solution was collected on cotton, separated from the main part of the adhering water by suction and dried over sulphuric acid for two hours. The dried samples were finely powdered, accurately weighed and fused. The excess remaining from the solution prepared by undersaturation method lost 35.34% and that from the solution prepared by supersaturation method lost 34.89% of weight. Theory is 34.64%. This indicated that sodium biphosphate with two mols of water of crystallization is in equilibrium with water at 25° C.

The results are stated as anhydrous sodium phosphate monobasic.

TABLE I.—RESULTS OF SOLUBILITY DETERMINATION OF SODIUM BIPHOSPHATE U. S. P. IN WATER AT 25° C.

Experiments.	Method of analysis.	Time of preparing solutions, days. 3.	7.	10.	23.
I	Dried at 110° C.	...	48.82	...	...
Prepared by under-		...	48.84	...	...
saturation method	Fused	...	...	...	48.49
		...	...	...	...
II					
Prepared by under-	Dried at 110° C.	...	...	48.61	...
saturation method	Fused	...	...	48.66	...
III					
Prepared by super-	Dried at 110° C.	48.72	...	...	...
saturation method	Fused	48.69	...	...	...

[1] Continued from JOUR. A. PH. A., 18 (1929), 1230.

The average of the above results is 48.69. *Conclusion: 48.69 Gm. of anhydrous sodium biphosphate is present in 100 Gm. of the aqueous solution saturated at 25° C.*

Therefore: One gram of anhydrous sodium biphosphate is soluble in 1.05 cc. of water, or 1 Gm. of the monohydrate is soluble in 0.79 cc. of water, or 1 Gm. of the dihydrate is soluble in 0.58 cc. of water at 25° C.

SOLUBILITY OF POTASSIUM CHLORATE IN GLYCERIN AT 25° C.

The potassium chlorate and the glycerin used for the solubility determination were both of U. S. P. quality. The potassium chlorate was very finely powdered before mixing with glycerin. Solutions were prepared by the undersaturation and the supersaturation method.

For the analysis of the solutions the U. S. P. assay method for potassium chlorate is not suitable, as glycerin is rapidly oxidized by permanganate solution. The chlorate was, therefore, reduced to chloride and the resulting chloride determined volumetrically by Volhard's method, or gravimetrically by precipitation as silver chloride. The reduction was effected by diluting a weighed quantity of the solution with water in an Erlenmeyer flask provided with a Bunsen valve. A moderate excess of acidulated ferrous sulfate solution was added and the mixture heated. The solution after cooling was treated with nitric acid, an excess of $N/10$ silver nitrate added and the excess titrated with $N/10$ sulfocyanate. Or, for gravimetric determination, the reduced solution after treating with nitric acid was treated with silver nitrate, etc., and the resulting silver chloride weighed.

TABLE II.—RESULTS OF SOLUBILITY DETERMINATION OF POTASSIUM CHLORATE IN GLYCERIN AT 25° C.

Experiments.	Time of preparing solution, days. 5.	12.	13.	14.	21.	42.
I						
Prepared by under-	1.04	..	..	..	..	..
saturation method	..	..	..	..	..	..
II						
Prepared by under-	..	..	..	1.06	1.04	..
saturation method	..	..	..	..	1.02	..
III						
Prepared by super-	..	..	1.07	..	..	1.07
saturation method	..	..	1.06	..	..	1.07
IV	..	1.10	..	..	..	1.06
Prepared by super-	..	1.11	..	..	..	..
saturation method	..	1.12	..	..	..	1.06

The average of these results, excluding those of Experiment IV after 12 days which indicate supersaturation, is 1.055. *Conclusion: 1.055 Gm. of potassium chlorate is present in 100 Gm. of a U. S. P.-glycerin solution saturated at 25° C.*

Therefore: One gram of potassium chlorate is soluble in 75.26 cc. (= 93.79 Gm.) of U. S. P. glycerin at 25° C.

SOLUBILITY OF POTASSIUM CITRATE IN GLYCERIN AT 25° C.

When potassium citrate is dissolved in glycerin a thick and viscous solution results. The saturation of the solution prepared by undersaturation method and the separation of excess solute in the solution prepared by supersaturation method

have taken place very slowly on account of the viscosity of the solution. The viscosity of the solution also caused difficulties in filtering. When cotton was used as a filtering fibre with the aid of strong suction applied over a period of several hours, a few cc. of a clear filtrate, enough to make an analysis, could be obtained. It was not, however, always possible to obtain a clear filtrate. Slightly turbid solutions yielded, as a matter of course, slightly higher results. Illustrative in this respect are the results of the Experiments I and II. The filtrate in Experiment II was clear and, though having been in contact with the solute three times as long as in Experiment I, it showed a lower concentration. The average result may therefore be slightly too high.

For analysis the assay method of the U. S. P. for benzoates and salicylates was used. About 0.5 Gm. of the solution was heated to the flashing point of glycerin and allowed to burn. The residue was finally ignited and the resulting potassium carbonate dissolved in $N/10$ hydrochloric acid and the excess titrated with $N/10$ sodium hydroxide, using methylorange indicator.

TABLE III.—RESULTS OF THE SOLUBILITY DETERMINATION OF POTASSIUM CITRATE IN GLYCERIN AT 25° C.

Experiments.	Time of preparing solutions, days. 9.	13.	24.	27.	40.	135.
I	...	...	...	...	28.73	...
Prepared by under-	...	27.27	27.62	28.40	28.79	...
saturation method	...	...	...	...	28.83	...
II						
Prepared by under-	...	...	...	...	...	27.23
saturation method	...	...	...	...	...	27.99
III						
Prepared by super-	29.01	...	...	28.86	...	...
saturation method	29.03	...	...	28.33	...	...

The average of all the results, except those of Experiment III after 9 days which, at this time, still indicated supersaturation of the solution, is 28.20. *Conclusion: 28.20 Gm. of potassium citrate is present in 100 Gm. of a U. S. P.-glycerin solution saturated at 25° C.*

Therefore: One gram of potassium citrate is soluble in 2.02 cc. (= 2.55 Gm.) U. S. P. glycerin at 25° C. (glycerin 1.246 at 25°/4° C.).

SOLUBILITY OF FERRIC CHLORIDE IN ALCOHOL AT 25° C.

Crystallized iron chloride U. S. P. was crushed and mixed with U. S. P. alcohol. It dissolved rapidly and to a large extent. A sample of the clear supernatant solution was taken out after various periods of time and the chloride-ion determined volumetrically. As is evident from the table saturation was attained in six days.

TABLE IV.—RESULTS OF SOLUBILITY DETERMINATION OF FERRIC CHLORIDE IN ALCOHOL AT 25° C.

Experiments.	Time of preparing solutions, days. 3.	6.	13.
Prepared by under-	50.77	51.52	51.37
saturation method	50.44	51.51	51.40

The average of Experiments II and III is 51.45. *Conclusion: 51.45 Gm. of ferric chloride is present in 100 Gm. of a U. S. P.-alcohol solution saturated at 25° C.*

Therefore: One gram of Ferric Chloride is soluble in 1.17 cc. (= 0.94 Gm.) U. S. P. alcohol at 25° C. (Density of alcohol used in the experiments was 0.8063 at 25°/4° C.)

SOLUBILITY OF METHYLENE BLUE IN WATER AND ALCOHOL AT 25° C.

The solutions of methylene blue U. S. P. in water or alcohol were prepared either by the undersaturation or the supersaturation method. They were analyzed by evaporating the solvent and drying the residue at 110° C. The iodometric method of Sabalitschka (*Chem.-Ztg.*, 49 (1925), 561) was used in several experiments but the results were not satisfactory.

The results shown in the tables refer to the residue obtained on drying at 110° C., that is to anhydrous methylene blue. The sample of methylene blue used for the experiments lost on drying at 110° C. about 12% of its weight. The water content of commercial methylene blue varies within a few per cent. It seldom corresponds to a definite number of mols of water of crystallization. The U. S. P. allows not more than 15% of water. Three mols of water of crystallization correspond to 14.5 %. The German Pharmacopœia concedes 18 to 22% which corresponds to from four to five mols. It was of interest to know whether the water content of methylene blue is changed during the solubility determination where it is in contact with water or alcohol. For this purpose some of the excess solute from the aqueous and alcoholic solutions was collected on a filter, dried in air for about one hour, then over sulphuric acid for two hours to remove the adhering solvent. An accurately weighed amount was then dried at 110° C. to constant weight. All samples, either taken from the aqueous or the alcoholic solution, or either from the solution prepared by undersaturation or supersaturation method, lost approximately 17%. This would indicate that methylene blue with four mols of water of crystallization is in equilibrium with water or aqueous alcohol at 25° C.

The excess of solute present at the beginning in the aqueous or alcoholic solution prepared by supersaturation method separated very slowly. After 39 days the alcohol solution had reached the concentration of the solution prepared by undersaturation method, which was saturated after 12 days. The solution in water prepared by supersaturation method, however, did not read the concentration of that prepared by undersaturation method during the observation period of 38 days. It shows a continuous decrease of concentration during that time. The results of this experiment are, therefore, not included in the calculation of solubility.

TABLE V.—RESULTS OF THE SOLUBILITY DETERMINATION OF METHYLENE BLUE IN WATER AT 25° C.

Experiments.	Time of preparing solutions, days. 4.	6.	9.	12.	22.	28.	38.
I							
Prepared by under-	2.32	..	2.28	2.32	..	..	..
saturation method	2.32	..	2.28	2.28	..	..	..
II							
Prepared by super-	..	3.95	..	3.84	3.67	3.50	3.25
saturation method	..	4.00	..	3.85	..	3.60	..

The average of Experiment I is 2.30. *Conclusion: 2.30 Gm. of anhydrous methylene blue is present in 100 Gm. of an aqueous solution saturated at 25° C.*

Therefore: One gram of anhydrous methylene blue is soluble in 42.81 cc. (= 42.48 Gm.) of water at 25° C.

Calculated for methylene blue with water of crystallization:

One gram of methylene blue with three mols (14.46%) of water of crystallization is soluble in 37.3 cc. (= 37.0 Gm.) of water at 25° C.

One gram of methylene blue with four mols (18.39%) of water of crystallization is soluble in 35.7 cc. (= 35.5 Gm.) of water at 25° C.

TABLE VI.—RESULTS OF THE SOLUBILITY DETERMINATION OF METHYLENE BLUE IN ALCOHOL AT 25° C.

Experiments.	Time of preparing solutions, days. 5.	9.	12.	18.	22.	28.	39
I							
Solution prepared by undersaturation method	..	1.45	1.48	1.49	..	..	..
	..	1.44	..	..	..	..	..
II							
Solution prepared by supersaturation method	1.64	..	1.63	..	1.59	1.55	1.48
	1.64	..	1.64	..	..	..	..

The average of all the results of Experiment I and of the results of Experiment II after 39 days, is 1.47. *Conclusion: 1.47 Gm. of anhydrous methylene blue is present in 100 Gm. of a U. S. P.-alcohol solution saturated at 25° C.*

Therefore: One gram of anhydrous methylene blue is soluble in 83.10 cc. (= 67.00 Gm.) of U. S. P. alcohol at 25° C. (Density of alcohol used 0.8063 at 25°/4° C.)

Calculated for methylene blue with water of crystallization:

One gram of methylene blue with three mols (14.46%) of water of crystallization is soluble in 72.4 cc. (= 58.4 Gm.) of U. S. P. alcohol at 25° C.

One gram of methylene blue with four mols (18.39%) of water of crystallization is soluble in 64.5 cc. (= 56.0 Gm.) of U. S. P. alcohol at 25° C.

SOLUBILITY OF BARBITAL SODIUM IN ALCOHOL AT 25° C.

Solutions of barbital sodium were prepared by the undersaturation and the supersaturation method. They were analyzed by the residue method. The alcohol was evaporated and the residue dried at 110° C. to constant weight. Due to the small solubility of this chemical in alcohol the results varied within about ±3% from each other. Variation of strength of the alcohol also has a considerable influence on the solubility. For some reason, which due to lack of time could not be investigated, the solution prepared by supersaturation method yielded a considerably lower concentration. The results of Experiment II are, therefore, not included in the calculation of solubility.

TABLE VII.—RESULTS OF THE SOLUBILITY DETERMINATION OF BARBITAL SODIUM IN ALCOHOL AT 25° C.

Experiments.	Time of preparing solution, days. 2.	4.	9.	12.	18.	24.	44.
I							
Solution prepared by undersaturation method	...	...	...	0.319	0.301	0.321	0.318
	...	...	...	0.300	...	0.318	...
II							
Solution prepared by supersaturation method	0.282	0.284	0.281	...	...	...	...
	...	...	...	...	...	...	...

The average of all the results of the solution prepared by the undersaturation method is 0.313. *Conclusion: 0.313 Gm. of barbital sodium is present in 100 Gm. of the U. S. P.-alcohol solution saturated at 25° C.*

Therefore: One gram of Barbital Soluble is soluble in 395.0 cc. (= 318.5 Gm.) of U. S. P.-alcohol at 25° C. (Density of alcohol used 0.8063 at 25°/4° C.)

SOLUBILITY OF SULPHONETHYLMETHANE IN ALCOHOL AT 25° C.

The solutions for the determination of the solubility of sulphonethylmethane in alcohol were prepared either by the undersaturation or the supersaturation method. They were analyzed by evaporating the alcohol at 60° C. and fusing the residue at 80° C. By this procedure constant weight was attained after a short time as may be seen from the following experimental data.

	I.	II.
Residue after 20 minutes at 80° C.	1.0244;	0.9438
Residue after 50 minutes at 80° C.	1.0240;	0.9432
Residue after 70 minutes at 80° C.	1.0240;	0.9432

The alcohol used for Experiments I, II and III, had a strength of 95.2% (by volume), that used for Experiments IV and V, 94.9%. This causes a slight difference in the results of the two groups of experiments performed with these two lots of alcohol.

TABLE VIII.—RESULTS OF SOLUBILITY DETERMINATION OF SULPHONETHYLMETHANE IN ALCOHOL.—ALCOHOL OF 95.2% BY VOLUME.

Experiments.	Time of preparing solutions, days. 1.	4.	6.	8.	12.	16.	32.	39.	41.
I									
Prepared by under-	...	13.67	...	...	14.02	...	...	14.33	14.21
saturation method	...	13.26	...	...	14.06	...	...	...	...
II									
Prepared by under-	...	...	14.01	...	...	...	14.36	...	...
saturation method	...	...	...	...	...	...	14.40	...	...
III									
Prepared by super-	14.83	...	...	14.64	...	14.77	...	...	...
saturation method	...	...	...	...	...	14.76	...	...	...

Alcohol of 94.9% by Volume.

Experiments.	Time of preparing solutions, days. 1.	6.	14.				
IV				V			
Prepared by under-	...	...	13.38	Prepared by super-	13.80	13.33	...
saturation method	...	...	13.42	saturation method	13.55	13.32	...

The average of the results of Experiment I, 39 and 41 days; Experiment II, 32 days and of Experiment III, is 14.41. The average of the results of Experiment IV, 14 days and Experiment V, 6 days, is 13.36.

The mean of both these averages is 13.9. *Conclusion: 13.9 Gm. of sulphonethylmethane is present in 100 Gm. of a U. S. P.-alcohol solution saturated at 25° C.*

Therefore: One gram of sulphonethylmethane is soluble in 7.7 cc. (= 6.2 Gm.) of U. S. P. alcohol at 25° C.

SOLUBILITY OF EMETINE HYDROCHLORIDE IN WATER AT 25° C.

The solubility of emetine hydrochloride was determined in the usual way. The solution was prepared by the undersaturation method only. In shaking the

solute with water at room temperature quite a large amount dissolved. Very soon, however, the solution formed a thick mass of fine crystals. There seems to occur the formation of a hydrate which possesses a different solubility. From the crystalline mass the solution was separated by suction and the clear filtrate evaporated on a water-bath and the residue dried at 100° C. The results are stated as anhydrous emetine hydrochloride.

It was also intended to determine the emetine hydrochloride in solution by shaking out the base with ether after making alkaline with ammonia, but, due to lack of time, this could not be accomplished.

TABLE IX.—RESULTS OF SOLUBILITY DETERMINATION OF EMETINE HYDROCHLORIDE IN WATER AT 25° C.

Experiments.	Time of preparing solutions, days. 8.	18.
Solution prepared by undersaturation method	16.56	16.51
	...	16.51

The average of these results is 16.53. *Conclusion: 16.53 Gm. of anhydrous emetine hydrochloride is present in 100 Gm. of an aqueous solution saturated at 25° C.*

Therefore: One gram of anhydrous emetine hydrochloride is soluble in 5.05 cc. of water at 25° C.

Calculated for emetine hydrochloride with two mols (or 11.23%) of water of crystallization:

One gram of emetine hydrochloride with 2 mols of water of crystallization is soluble in 4.37 cc. of water.

Calculated for emetine hydrochloride with four mols (or 20.20%) of water of crystallization:

One gram of emetine hydrochloride with 4 mols of water of crystallization is soluble in 3.83 cc. of water at 25° C.

Calculated for emetine hydrochloride with $3^1/_2$ mols (or 18.13%) of water of crystallization. This value is included as the Pharmacopœia allows a loss of not more than 19% on drying Emetinae Hydrochloridum at 100° C.

One gram of emetine hydrochloride with three and one-half mols of water of crystallization is soluble in 3.95 cc. of water at 25° C.

SOLUBILITY OF VANILLIN IN ALCOHOL AT 25° C.

The solution for the solubility determination of vanillin in alcohol was prepared by the undersaturation method. It was analyzed by evaporating the solvent and drying the residue at 60° C. to constant weight. The loss of weight on drying the original vanillin at this temperature was so small as to be safely ignored. The density of the alcohol used was 0.8063 at 25° C. which corresponds to 95.2% by volume.

TABLE X.—RESULTS OF SOLUBILITY DETERMINATION OF VANILLIN IN ALCOHOL AT 25° C.

Experiment.	Time of preparing solution, days. 10.	15.
Solution prepared by undersaturation method	48.38	48.46

The average of the results is 48.42. *Conclusion: 48.42 Gm. of vanillin is present in 100 Gm. of the U. S. P.-alcohol solution saturated at 25° C.*

Therefore: One gram of vanillin is soluble in 1.31 cc. (= 1.06 Gm.) U. S. P. alcohol at 25° C.

BIBLIOGRAPHY OF PHARMACEUTICAL RESEARCH

Compiled by A. G. DuMez, Reporter on the Progress of Pharmacy.

All articles in these lists will be presented in abstract form in the bound volumes of the Year Book, which is issued annually. Those desiring abstracts immediately can obtain them for a fee of one dollar each by communicating with A. G. DuMez, University of Maryland, School of Pharmacy, N. E. cor. Lombard and Greene Sts., Baltimore, Maryland.

PHARMACOPŒIAS AND FORMULARIES.

Meyer, Karl
Review of the new edition of the Spanish Pharmacopœia
Pharm. Ztg., 76 (1931), 92

PHARMACEUTICAL PREPARATIONS.

Bateson, F. R. C.
Comparison of certain suspending agents
Pharm. J., 126 (1931), 53
Ferrey, G. J. W.
Phenol-water mixtures
Pharm. J., 126 (1931), 58
Turner, H. A.
Preservation of syrup of acacia
Pharm. J., 126 (1931), 160
Wokes, Frank, and Elphick, G. K.
Extraction of ergot by the methods of D. A. B. VI and U. S. P. X
Quart. J. Pharm. & Pharmacol., 3 (1930), 599

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS.

Anderson, John F.
U. S. P. biological assay of cod liver oil
Jour. A. Ph. A., 20 (1931), 117
Britt, Lewis C., and Lynn, E. V.
Relaxant action of benzyl derivatives
Jour. A. Ph. A., 20 (1931), 119
Dyer, F. J.
Biological standardization of tincture of aconite
Quart. J. Pharm. & Pharmacol., 3 (1930), 626
Brewer, C. M., and Ruehle, G. L. A.
Limitations of phenol coefficients of coal-tar disinfectants
Ind. Eng. Chem., 23 (1931), 150
Emig, Herbert M.
Pharmacological action of ginger
Jour. A. Ph. A., 20 (1931), 114
Groll, J. Temminck
End-point of tryptose activity
Pharm. Weekbl., 68 (1931), 109
Ziganov, S. V.
Influence of magnesium salts on strychnine or cocaine poisoning
Zhur. exper. Biol. Med., 12, 252; through *Chem. Abstr.*, 24 (1930), 2196

BOTANY AND PHARMACOGNOSY.

Goester, L. E.
Pharmacognostical notes
Pharm. Weekbl., 68 (1931), 41
Kingdom, F.
Botanical history of official rhubarb
Gard. Chron., 88 (1930), 134; through *Pharm. J.*, 126 (1931), 105
Starker, T. J., and Wilcox, A. L.
Cascara
Am. J. Pharm., 103 (1931), 73
Wattiez, N., and Sternon, F.
Pharmacognostic study of the seeds of Kickxia Africana
J. pharm. Belg., 13 (1931), 141

ALKALOIDS AND GLUCOSIDES.

Baggesgaard-Rasmussen, H.
Composition of tetrapon, a mixture of opium alkaloids
Arch. Pharm. Chemi., 38 (1931), 29
Kubota, Seiko, and Nakashima, Seikichi
Chemical study of the alkaloid "leonurine" from Leonurus sibericus
Folia Pharmacol. Japan., 11, 135; through *Chem. Abstr.*, 25 (1931), 771
Mascre, M., and Caron, M.
Alkaloidal content of Lobelia inflata preparations
Bull. sci. pharmacol., 37 (1930), 657
Warren, L. E., Watkins, H. R., and Keenan, G. L.
Improvements in the processes for the identification and determination of alkaloids
Jour. A. Ph. A., 20 (1931), 128
Zechner, L.
Arbutin content of some Ericaceae
Pharm. Monatsh., 12 (1931), 4

ESSENTIAL OILS.

Kroll, S.
Adulteration of clove oil with benzyl alcohol
Pharm. Ztg., 76 (1931), 128

OILS, FATS AND WAXES.

Ikuta, H.
General properties of Japanese beeswax
J. Soc. Chem. Ind., Japan, 33 (1930), 467; through *J. Soc. Chem. Ind.*, 50 (1931), 125

Schuster, G.
Oxidation of castor oil with potassium permanganate
J. pharm. chim., 13 (1931), 5

INORGANIC CHEMICALS.

Allport, Noel L., and Cocking, T. T.
Calcium phosphate, B. P.
Quart. J. Pharm. & Pharmacol., 3 (1930), 578

Caley, Earle R.
Rapid colorimetric estimation of potassium
J. Am. Chem. Soc., 53 (1931), 539

Cocking, T. T.
Determination of arsenic and mercury in Donovan's solution
Quart. J. Pharm. & Pharmacol., 3 (1930), 575

Ionesco-Matiu, Al., and Popesco, A.
Determination of hypophosphites and arsenites by the mercurimetric method
J. pharm. chim., 13 (1931), 12

Kurschner, O. H.
Manganese-containing chlorinated lime
Pharm. Ztg., 76 (1931), 184

Rothlin, Herman
Determination of alkali carbonate in basic magnesium carbonate
Farm. Revy., 30 (1931), 49

Stas, M. E.
Determination of small quantities of zinc in lead salts
Pharm. Weekbl., 68 (1931), 93

Stich, Conrad
Sure method of detecting small quantities of phosphorus in solution in oil
Pharm. Ztg., 76 (1931), 112

ORGANIC CHEMICALS.

Armstrong, E. Frankland
Thoughts from a chemist's garden
Pharm. J., 126 (1931), 50

Ekkert, Lad
Contribution to the color reactions of benzol, naphthalin, anthracene, phenanthrene, quinone, anthraquinone and quinoline
Pharm. Zentralh., 72 (1931), 51

Ekkert, Lad
Contribution to the reactions of glycerol and calcium glycerophosphate
Pharm. Zentralh., 72 (1931), 85

Feist, K., and Klatt, F.
Quantitative determination of *p*-chlorophenol in pharmaceutical preparations
Pharm. Ztg., 76 (1931), 112

Fischer, Robert, and Stauder, Fritz
Detection of juglone
Pharm. Zentralh., 72 (1931), 97

Haas, W.
Crystallographic investigation of microsublimates of synthetic drugs
Mikrochem., Emich Festschr. (1930), 83; through *J. Soc. Chem. Ind.*, 50 (1931), 90

Huppmann
Detection and estimation of hydroxyl groups in organic compounds
Pharm. Ztg., 76 (1931), 113

Josephson, Karl
Characterization of hydroaromatic alcohols with triphenyl-chlor-methane
Farm. Revy, 30 (1931), 69

Kuhlmann, G.
Chemistry of neodorm
Pharm. Ztg., 76 (1931), 113

Morton, C.
Electrometric studies of bismuth citrates
Quart. J. Pharm. & Pharmacol., 3 (1930), 561

Schwyzer, Julius
Manufacture of benzonaphthol and its salicylic acid acetyl-paramido-phenyl ester
Pharm. Ztg., 76 (1931), 186

Seaman, William, and Johnson, John R.
Preparation of derivatives of phenylboric acid and their action on bacteria
J. Am. Chem. Soc., 53 (1931), 711

Stamm
Chlorine number of drugs
Farm. Notisblad (1930), 39; through *Pharm. J.*, 126 (1931), 163

Szancer, H.
Reaction of phenyl acetylsalicylic acid
Pharm. Zentralh., 72 (1931), 68

DRUG ADDICTS IN THE U. S.

The Division of Mental Hygiene of the U. S. Public Service has made an estimate of the number of addicts in the United States. An accurate count is difficult; the estimated number is given as 110,000, a figure far below that of extremists on the subject.

The first number of *The American Journal of Cancer* made its appearance December 31st. Medical men welcome the publication stating that this subject required such a means of information.

PHARMACEUTICAL HISTORY BROUGHT TO LIGHT BY A FAMOUS MISNAMED PICTURE.

BY ELSIE WOODWARD KASSNER, PH.C., F.I.C.

Hanging in the Library at the Chemists' Club in New York City is to be seen a picture which has, until recently, been entitled "Michael Faraday Washing Apparatus for Sir Humphrey Davy;" this was presented to the Club by the late Dr. Charles F. Chandler, famous American chemist and one of the founders of the American Chemical Society, who purchased it from an art dealer when on a visit to England, being told that it bore the above-mentioned title. By chemists in this country it has always been accepted as authentic and has found its way into textbooks on chemistry and other publications.

Dr. H. V. Arny drew the attention of the writer, a few months ago, to the cover illustration of Vol. II, No. 11, June 1930, of the *Percolator*, the monthly publication of the Chemists' Club; this was a reproduction of the picture and on page 151, the *Percolator* says "the original is a water-color painting by W. Hunt, representing the laboratory of John Bell in Oxford Street, London. It shows John Simmonds and the boy William, although it was formerly thought to be Michael Faraday washing apparatus for Sir Humphrey Davy." It seemed that it would be of interest to pharmacists to find out as much as possible of the story of the picture, and in the search for information a wealth of pharmaceutical history has come to light.

Doubt as to the title of the picture at the Chemists' Club was first expressed by Mr. F. H. Carr, then president of the Society of Chemical Industry in England, who was visiting this country in 1928, and in a conversation with Dr. Arthur D. Little said he thought the laboratory represented was that of John Bell; on his return to England he made some investigations, and in June 1929 wrote to Dr. Little telling him that the picture was called "The Laboratory" and represented the premises of Jacob Bell in Oxford Street; he referred to the issue of the *Chemist and Druggist* for July 30, 1898, where the picture is reproduced and is said to represent John Simmonds and the boy William; Mr. Carr said there is little reason to believe the truth of the allegation that it is Michael Faraday and Humphrey Davy. Dr. Little sent Mr. Carr's letter to Mr. D. D. Berolzheimer, editor of the *Percolator*, and it was printed in Vol. II, No. 3, November 1929. Dr. Little said that he himself had visited Faraday's laboratory at the Royal Institution in London and that it was not at all like the picture; this statement, however, proves nothing, since Faraday is said to be the boy in the picture and it has been supposed that the laboratory represented is that of Sir Humphrey Davy for whom he worked.

It is interesting to note a few places where the picture has been reproduced. It may be found in "Smith's College Chemistry" revised and rewritten by James Kendall, 1922, on page 347, under the title "Michael Faraday Washing Apparatus for Sir Humphrey Davy," and in "College Chemistry Companion," by James Kendall, 1924, as the frontispiece, under the same title. The picture appears also in the *Journal of Chemical Education*, Vol. II, No. 9, September 1925, as the inauguration of a new feature, "the publishing each month of a reproduction of a work of art on a subject of interest to chemists or students of chemistry," entitled "Michael Faraday Washing Apparatus for Sir Humphrey Davy." Again in

the same *Journal*, Vol. V, No. 10, October 1928, it is used as an illustration for an article "Contributions of Chemistry to Industry, Part I," by Walter A. Schmidt, with the legend, "Michael Faraday Washing Apparatus in the Laboratory of Sir Humphrey Davy." However, the *Journal*, Vol. VII, No. 4, April 1930, quoting from the *Chemical Age*, January 4, 1930, calls attention to the wrong title and corrects it, citing Dr. Little's letter in the *Percolator* for November 1929. Apparently, now, chemists will realize that they no longer have any claim to the picture.

Mr. Hugh N. Linstead, Secretary and Registrar of the Pharmaceutical Society of Great Britain, who is personally known to the writer, has kindly supplied some information which he has gathered concerning Bell's; strangely enough, just at

Plate I.—"The Laboratory" engraved by J. D. Murray, from painting by W. Hunt. Reproduced from copy in British Museum Print Room (No. 1864/6/11/9).

this time he himself was interested in the picture, as a copy had recently come into his possession. The reproduction here given (Plate I) is from a photograph sent by Mr. Linstead, taken from the copy of the engraving in the Print Room of the British Museum (No. 1864/6/11/9); it is called "The Laboratory" and was engraved by J. D. Murray from the painting by W. Hunt in 1840, and published on March 1, 1842; on the back of the British Museum copy is written in pencil, "Jacob Bell's Laboratory, Oxford St." Professor H. G. Greenish, dean of the School of Pharmacy of the Pharmaceutical Society, has told Mr. Linstead that he visited that laboratory before extensive alterations were carried out in 1870, and is quite sure that the picture represents the laboratory at the back of the shop of

John Bell & Co. at 225 Oxford Street. A copy hangs in the Wellcome Historical Medical Museum in Wigmore St., London, where are also the actual shop-front of 225 Oxford Street (reproduced here, Plate II), and many pieces of apparatus shown in the picture, for example, the big wooden receiver for distilled water seen on the left. Through the shop-door is a view straight up Great Portland Street, corresponding with the site of the shop. It has been reported that the staff in 1840 were very annoyed because the artist put the shovel, etc., on the floor which was usually kept clear. It appears that the old man was John Sim-

Plate II.—Shop-front of John Bell & Co., preserved in Wellcome Historical Medical Museum. Copyright, The Wellcome Historical Medical Museum.

monds, who had been with the firm almost from its founding in 1798 when he was shop-boy; the boy in the picture was known as William (surname unrecorded), and he remained at Bell's for a great many years. The *Chemist and Druggist* (July 30, 1898, page 160) says Hunt's picture represents the laboratory "in the Fifties," while the *Pharmaceutical Journal* (July 23, 1898, page 87) calls it the "Original Laboratory" of John Bell & Co.; there seems to be no doubt that Hunt painted the laboratory as it actually appeared in 1840, and if the statement is to be believed that Jacob Bell in his early years in the business substantially altered it, then this altered laboratory is the one Hunt painted, and, of the titles given

by the *Chemist and Druggist* and the *Pharmaceutical Journal*, neither can be considered correct.

William Henry Hunt, the painter of the picture, is worthy of some comment in an article such as this. Born in 1790, and becoming a student at the Royal Academy, he had three oil paintings hung there in 1807; in 1814 he first exhibited at the Society of Painters in Water-color, becoming an associate of the Society in 1824 and a full member in 1827; to the year of his death he was a most prolific contributor to the Society's exhibitions, in all about 800 of his works appearing there. He was one of the creators of the English School of water-color painting, his sense of color being extraordinarily true; his subjects were usually interiors or still life; one authority states that "The Laboratory" is among his best works. Ruskin lectured at the Royal Academy on Hunt as a painter, and of him he said, "He was, take him for all in all, the finest painter of still life that ever existed." It is said that Hunt was not a striking man nor a brilliant member of society; it is interesting to note that a writer of some reminiscences of Hunt states that he

Plate III.—Laboratory of John Bell & Co. in 1871, taken from the shop.

Plate IV.—Laboratory of John Bell & Co. in 1871, looking toward the shop.

first met the artist at the house of Mr. Maw, where Hunt was a frequent visitor; the Mr. Maw referred to was the senior partner of the firm of J. and S. Maw of Aldersgate Street, London, manufacturers of surgical appliances and druggists' sundries—since known all over the world as S. Maw, Son & Sons. Mr. Maw was himself an amateur painter of no mean ability and a sound critic, his house containing pictures by the best artists of the age; he had possessed himself of a choice collection of Turner's works long before the merits of this artist were made known by Ruskin. Hunt died in the year 1864.

It would be of interest to trace the history of John Bell & Co. but that would be a long story, and so brief mention is made here of some of the men connected with the business who became widely known, to show how big a part has been played by the firm in the history of British pharmacy.

John Bell opened the shop at 338 (since known as 225) Oxford St., London, in 1798. At the start, business was not very flourishing and the story is told that John Simmonds, the shop-boy would sometimes be instructed to pound a duster continuously in a mortar so that the noise would make people believe that a great deal of work was being done; whether this is true it is impossible to say, but since it is known that John Bell was a strict Quaker, it is doubtful if he

would stoop to such deception; however, this pounding of dusters was even at a much later period apparently common, as the writer's father, himself a pharmaceutical chemist, has vouched for its being carried out in shops in which he worked in his youth.

A little later, business increased and the staff consisted of three apprentices and two shopmen, the latter working in the back-shop which was called the "Elaboratory." Regulations in force at this time have been preserved; these detailed the work to be done by the various members of the staff and it is interesting to read at the present time under the heading "Sundries to be done every morning before breakfast" the item "Trim and clean lamps;" another regulation reads "When no customers present see that supplies are full, prepare pills, pick gums, etc. 'To avoid disappointing of customers, and to be particularly careful not to allow them to wait without being spoken to.' " There are also rules for personal conduct, for example, "Rise at 7, go to bed at 11 and be cleaned at breakfast time," and "Remember it is as much in the power and duty of the employed as the employer to study to make each other happy, and to strive to do as he would be done by."

Plate V.—Etching by Macbeth of laboratory of John Bell & Co. in the nineties, looking toward the shop.

In 1819, John took two of his assistants into partnership and later, in 1836, when they retired, John's two sons Jacob and Frederick John who had been working in the business, became members of the firm. John was one of the founders of the Pharmaceutical Society of Great Britain, in 1841, but at this time was leaving the business much in the charge of his sons and busying himself with the good works of the Society of Friends at Wandsworth, a few miles out of London, where he lived. Frederick John retired from the business in 1847, and when John Bell died in 1849, Jacob became the proprietor.

In 1821 Theophilus Redwood, having served an apprenticeship with a Cardiff apothecary, came to work at Bell's and in 1824 took charge of the dispensing; at this time it was found necessary to enlarge the pharmacy and all members of the staff were invited to submit plans, a premium being offered for the one approved; Redwood's design was accepted in every detail and the pharmacy altered accordingly; a double shop-front was put in, the windows being bow-shaped and containing nothing but carboys of different colors—doubtless this front is the one preserved in the Wellcome Museum. Redwood afterwards went into business on his own account as a

chemical manufacturer, and later became well known to generations of students at the School of Pharmacy of the Pharmaceutical Society; he first gave lectures there in February 1842, and in May of the same year was appointed one of the three permanent lecturers; he was director of the Laboratory (which was planned from his designs and which was the first in England opened for instruction in chemistry) 1844–1862, Professor of Chemistry and Pharmacy 1846–1885, Curator of the Chemical Museum 1844–1867 and Professor Emeritus 1885–1892. He served as president of the British Pharmaceutical Conference 1875–1877. Mention must be made here of Redwood's famous son, Boverton, who in his youth worked in his father's laboratories at the School of Pharmacy; later he became an authority on petroleum and in 1886 devised the well-known Redwood viscometer; he was knighted in 1905 and made a baronet in 1911. At his death, in 1919, an obituary notice said "By his decease the British petroleum industry loses its foremost technologist." Contemporaries of Redwood's at Bell's were Robert Alsop, well known for his work on infusions and George Nelson, later famous as a manufacturer of gelatin.

Jacob Bell entered his father's business in 1827, at the age of 17, and lived in the house with the other apprentices, working with them in chemical and other studies; he and Redwood together attended Michael Faraday's and Professor Brande's lectures at the Royal Institution, while Bell at the same time studied at King's College and went to an art school, working under Sass and H. P. Briggs, R.A.; he was obliged to give up his art studies, however, owing to the fact that he had not much time to spare for them; it is said that he showed little aptitude, though he was extraordinarily clever at making humorous sketches for his own amusement. During his apprenticeship he was also interested in the study of comparative anatomy and was very successful in the preparation of skeletons of animals, which he carried out in his leisure hours. Later, he set up a laboratory for himself in his bedroom over the shop in Oxford Street and there carried out chemical experiments. It is to be observed that the young Jacob Bell had many interests and his days must have been fully occupied, but he found time for a round of social activities as the gaieties of London life appealed to him; before he was 30, though a bachelor, he was running a large establishment in Langham Place, which soon became the center of a literary and artistic circle. At this time he began to get together a collection of pictures which grew later, when his means increased, to large proportions; among the collection, some of the better-known works were "Dignity and Impudence," by Sir Edwin Landseer, famous painter of animals; a replica of Rosa Bonheur's "Horse Fair," by the artist herself, and Frith's "Derby Day;" these, together with some other paintings, about 20 in all, were left by Jacob Bell at his death to the nation, and at that time it was said that the value of the legacy was about £20,000. It is possible that Hunt was one of the artists who were numbered among Bell's friends who were frequent visitors to his house. Sir Edwin Landseer was one of Jacob Bell's closest friends and shortly before Bell died, he painted a remarkable likeness of him; this came into the possession of Thomas Hyde Hills who after Bell's death, had engravings made of it at his own expense by Landseer's brother, Thomas; these were sold and the entire proceeds given to the Pharmaceutical Society.

Jacob and his brother often talked with some of the members of the staff at Bell's of forming a society for mutual improvement, and the general improvement of the whole body of chemists and druggists; the idea took shape in March 1841 at a tea-party at Jacob Bell's, when the Pharmaceutical Society of Great Britain came into being; its formal constitution, however, took place at the Crown and

Anchor Tavern in the Strand a month later. The first roll of members contained, among others, the names of John Bell and his two sons, with those of 10 of their assistants. With the work of the Society Jacob became very closely bound up for the rest of his life; in July 1841 he produced the first number of the *Pharmaceutical Journal*, and was its editor until his death—no small work for a man with so many interests. In 1850 he wished to enter Parliament to secure an Act for the regulation of Pharmacy and he was elected as a Liberal member for St. Albans; in the following year he moved for leave to bring in a bill to regulate the qualification of pharmacists; this Pharmacy Bill was introduced and read twice. In 1852 he again brought in the Pharmacy Bill, which was read twice and eventually amended and passed, and received the royal assent that same year. Bell was disappointed, as the amended bill was not exactly what was wanted, but it was better than none; he was not elected to Parliament again.

He served as president of the Pharmaceutical Society 1856–1859, though already in failing health owing to an affection of the larynx; on May 18, 1859 he presided at the annual meeting, although he could not speak above a whisper; his admirable address was written and in this he set out what had been his rules of action, and these are worth recording here: "(1) Never to take offence at any reception, however cool, abrupt or even rude. (2) Not to be discouraged at a cold shoulder. (3) Not to look down on a man because he has a small shop or lives in a back street. (4) Never to lose sight of the main object from a mistaken notion of dignity and self-respect. (5) Never to be goaded into a quarrel or loss of temper." On June 1st he presided at a meeting of the Council for the last time, and on June 12th he passed away. To the Pharmaceutical Society in his will, he left a legacy of £2000 to set up new laboratories. A bust of Jacob Bell stands in a niche in the hall at 17 Bloomsbury Square, immediately opposite the main entrance, and this serves to remind pharmacists, as soon as they come into the building, of one of the Fathers of British Pharmacy; his portrait is to be seen in the Council Room, along with those of other presidents of the Society; his name is perpetuated by the "Jacob Bell Scholarships" to which reference is made later.

In the early thirties, Henry Deane was superintendent of the laboratory at Bell's but in 1837 he left and bought the business at 17 The Pavement, Clapham Common, which is still known as "Deane's" though no longer owned by anyone of that name. Deane was one of the founders of the Pharmaceutical Society, and after serving as vice-president 1851–1852, became president 1853–1854, afterwards remaining on the Council and becoming a member of the Board of Examiners; he was president of the British Pharmaceutical Conference for the first two years of its existence 1863–1865.

When Deane left Bell's, charge of the laboratory was given to George Baggett Francis, whose name appears on the first roll of members of the Pharmaceutical Society; Francis was at this time the head of the household at 225 Oxford Street and here in 1850 his son George Bult Francis was born; as a child George Bult frequently saw Jacob Bell, and in after years proudly recalled how he had been dandled on Bell's knee; as a young man he attended the Society's School and afterwards joined his father's firm, known as Hearon Squire & Francis, which became eventually one of the businesses making up the now well-known British Drug Houses, Ltd., of which company George Bult Francis became a director. He was the possessor of a notebook kept by Jacob Bell when an apprentice, and in this are to be seen entries of his work and some drawings, not all of which are serious; this book was presented to the Pharmaceutical Society in 1922 and is preserved in the Library. George Bult Francis died in 1929; it is his son Alan,

one of the directors of the British Drug Houses, Ltd., who recently gave Mr. Linstead a copy of Hunt's picture, which he had found among his father's possessions.

Another name connected with Bell's to be found on the Pharmaceutical Society's first list of members is that of Robert Bentley, who worked in the pharmacy while a student at the Society's School in 1842. Later, he became professor of Botany in the School 1849–1852, professor of Botany and Materia Medica 1852–1887 and Professor Emeritus 1887–1893; he also held the position of curator of the Materia Medica and Botanical Museum 1849–1867, and served as president of the British Pharmaceutical Conference 1865–1867. He was a Fellow of the Linnean Society and the author of various works on botany.

Thomas Hyde Hills, having served an apprenticehsip at Brighton with a former Bell's assistant, came to London in 1837 and was engaged by John Bell; Jacob, only five years Hills' senior, took a great fancy to the young man and almost from the first Hills lived at Langham Place with him, staying there after Jacob's death in 1859, keeping the house as a center for Jacob's friends until death thinned their ranks, and being always ready to throw it open for conferences and meetings. Hills became superintendent of Bell's laboratory in 1845, attended the School of Pharmacy and qualified as a pharmaceutical chemist in 1848; by this time he was indispensable to Jacob Bell, who, after losing his father and brother from the business, made him a partner in 1852. Samuel Gale, who had been a student in the School of Pharmacy in 1850, came from Barnstaple to superintend the laboratory in 1857. When Jacob Bell died in 1859, he left the business to Hills, who thus became sole proprietor. In 1870 Bell's was considerably enlarged and the laboratory extended and modernized, the work being carried out by Coffey, the laboratory engineer (of Coffey still fame); the photographs reproduced here (Plates III and IV) show the laboratory in 1871, and in one of these (Plate III) Hills may be seen at the left, while Gale appears in both; it is interesting to notice (on the right of Plate III and the left of Plate IV) a huge pan of solid tin, weighing about a ton, which fetched £250 when it was sold. Hills' name appeared on the first roll of members of the Pharmaceutical Society, and like his partner Jacob Bell, he was active in the work of the Society, serving as vice-president 1863–1868, treasurer 1868–1871 and president 1873–1876. He died in 1891, leaving a fund for a gift of books each year to the Periera Medallist and Jacob Bell Scholars, "in memory of Jacob Bell," the gift being known as the "Hills' Prize;" he also left a gift of books each year to the local branch of the Society in the town in which the British Pharmaceutical Conference meets, and a legacy to found the "Hills' Orphan Fund" for the purpose of sending orphans of members of the Pharmaceutical Society to orphan schools and asylums.

In 1871, after an apprenticeship in the provinces and experience in Berlin and Paris, Walter Hills, nephew of Thomas Hyde Hills, came into the business; he and Gale became partners on the death of the elder Hills and when Gale died in 1893, Walter Hills was the sole owner of Bell's. When the centenary of the founding of Bell's was celebrated in 1898, Walter Hills was serving his third consecutive term as president of the Pharmaceutical Society (1896–1899) and later acted as treasurer, so, in his connections with the Society, he was following in the footsteps of Jacob Bell and Thomas Hyde Hills. When the wholesale and retail parts of Bell's business were separated in 1908 and the latter, amalgamating with Croyden & Co., Ltd. (founded in 1832 by George Croyden who had worked at Bell's), became known as John Bell & Croyden, Ltd. and moved to 50 Wigmore Street, Walter Hills was chairman of the Board of Directors; in 1912 when the Wigmore Street pharmacy was doubled in size, the then Lord Mayor of London, Sir Thomas Boor Crosby, M.D., a distinguished surgeon, opened the new premises; on being welcomed by Walter Hills, he recalled the fact that as a young man he had visited Jacob Bell in Langham Place and remembered well his fine collection of pictures. In recent years Walter Hills has retired from business.

Some particulars regarding Bell's in the nineties have come into the writer's hands, and a few of these are set down here in the belief that they will be of interest to pharmacists of to-day. It is worthy of note that at this time the premises were arranged in just the same way as when Hunt painted his picture, that is, the laboratory was behind the shop and separated from it by a small counting-house and general office. The shop or pharmacy contained two long dispensing counters running its whole length, where prescriptions were made up, as they always had been, in full view of the customers; the walls were covered with "shop-rounds," or bottles containing the drugs, etc., necessary for dispensing. The staff here consisted of 11 dispensers, each having

his own section of the counters which were known as the "Boards;" the bottom-board man, or most junior assistant, was called "Stinker" because to him were given all prescriptions calling for pills containing asafœtida, valerian and other evil-smelling drugs; other assistants also had their own nick-names, for example the fourth was known as "Infusioneer," as one of his duties was to have ready a constant supply of fresh infusions. The laboratories were well equipped for making many galenical and pharmaceutical preparations; one room in the warehouse section was used for dispensing operations carried out by an assistant known as "Rex Pilularum," as he was responsible for dispensing pills on prescriptions calling for more than 6 dozen; he also maintained the supply of stock pills and prepared many pharmaceutical odds and ends, and was helped in this work by an assistant always alluded to as "Smike."

The staff was housed partly over the pharmacy in Oxford Street and partly in the upper premises of the warehouse section in Hills Place; all positions were "indoors" (*i. e.*, food and lodgings were provided) and salaries ranged from £25 to £80 a year, except for the superintendents whose pay was a little higher. The food was plain but plentiful, breakfast consisting of coffee and bread and butter only, except on one day each year, on which the whole of the staff assembled at 6:30 A.M. in the pharmacy to clean thoroughly the complete set of shop-rounds all at once, when eggs were served for breakfast as a special treat, and it is recorded that the assistants held competitions to see who could eat the greatest number. Beer was served at 11:00 A.M. and also at lunch and supper, eight barrels being always on the premises and four new ones ordered as soon as four were empty. A set of rules in force at this time in the shop and the house makes most interesting reading; rules for the shop number nine and are headed Promptitude, Attention, Order, Accuracy, Safety, Neatness, Delivery, Interference and Success in Business; the last is especially worthy of quotation: "9. *Success in Business.* A man's success depends on himself. To succeed a man must excel. To excel it is necessary to do one's best, whether working or playing. Anything worth doing is worth doing well. It is not every man who reaches the goal of his ambition; but every man succeeds who is determined to do so. Therefore, when you have made choice of your calling make it your pleasure, as well as your business. By so doing a man obtains his livelihood and independence, becomes respected, and a useful member of society. 'This, above all—To thine own self be true; And it must follow as the night the day, Thou canst not then be false to any man.' " In regard to the "Rules for House" it is amusing to note, among other things that "all lights in the bedrooms must be put out by 11:30 P.M.; and reading in bed by candlelight is strictly forbidden;" also that "it is requested that gentlemen will appear at the breakfast-table dressed for the day, in order that they may be at their respective duties punctually at 9:00 A.M."

After Gale's death in 1893, when J. R. Wretts, who had qualified in 1868 and been with the firm for many years, was manager of the shop, E. W. Lucas came from Hong-Kong to take charge of the laboratory; he was present when Macbeth, in 1897 or 1898 drew the charcoal sketch from which the etching (reproduced here, Plate V) was made as a companion to Hunt's picture; the artist worked very rapidly, putting in the laboratory first and then calling in the workmen one by one, saying, "I'll see if I can work your ugly mug in somewhere." Lucas still has the charcoal sketch in his possession. He is the author of the well-known "Practical Pharmacy" and also of "The Book of Prescriptions" and "The Book of Receipts;" he has been a member of the Board of Examiners of the Pharmaceutical Society and also of the Committee of Reference of the British Pharmacopœia. In 1904, he, Wretts and John Stuart Hills (son of Walter Hills; he had just come to the end of a distinguished career at the Society's School, where he was Salters Research Fellow 1903–1904) obtained interests in Bell's, and in 1908 on the separation of the wholesale and retail parts of the business, he went with John Stuart Hills to Southwark where the wholesale business was developed under the name of John Bell, Hills & Lucas; at the same time he was on the Board of Directors of John Bell & Croyden, Ltd.; recently (1930) he has retired from business.

In late years John Bell & Croyden, Ltd. have absorbed Langham Bros., dealers in fine chemicals and perfumery and Arnold & Sons, surgical instrument makers; in 1928 the amalgamation of Bell's with Savory & Moore's has linked up two historic pharmacies, the latter still standing in the same place in New Bond Street where it was founded in 1780. The new company includes among its directors E. T. Nethercoat, C.B.E., president of the Pharmaceutical Society 1922–1924, Arthur Ledsam Savory, sometime member of Council of the Pharmaceutical Society,

E. J. C. Savory, E. A. Umney and J. E. Saul, F.I.C., who has served as a member of the Board of Examiners of the Pharmaceutical Society. In connection with Savory & Moore's, it is noteworthy that Thomas Field Savory, who bought the business in 1797, invented Seidlitz Powders and patented them in 1815, and that at this time also Jenner's Absorbent Lozenges (invented by Dr. Edward Jenner of smallpox vaccination fame) were introduced and these are still sold by the firm; that John Savory (grandfather of Arthur Ledsam) helped to found the Pharmaceutical Society and served as vice-president 1843–1844 and president 1844–1848; that Dinneford & Co. was absorbed by the firm, this business being owned by Michael Carteighe, president of the Pharmaceutical Society 1882–1896, whose brother John was once a partner with him, John in his youth having served as an assistant to Michael Faraday at the Royal Institution. Godfrey & Cooke's business was also acquired by Savory & Moore's; this was founded in 1680 by Godfrey, who had previously served as an assistant in the laboratory of Robert Boyle, famous in the world of science for the establishment of Boyle's Law in 1660; Godfrey's grandsons sold out to Cooke and in 1818 William Ince entered the firm; he served the Pharmaceutical Society as president 1850–1851 and on his death in 1853 his son Joseph succeeded him in the business; the latter is best known for his book "Latin Grammar of Pharmacy," familiar to most pharmacy students, and for editing Daniel Hanbury's "Science Papers;" he became professor of Pharmacy in the Society's School in 1886 and remained there until 1896, having previously sold out Godfrey & Cooke's to Thomas Greenish, who was president of the Pharmaceutical Society 1880–1882, and president of the British Pharmaceutical Conference 1885–1886; his son, Henry George Greenish, is the present dean of the School of Pharmacy.

Jacob Bell's name will not be forgotten by pharmacists, if only on account of the "Jacob Bell Scholarships," founded in 1860 to "perpetuate his memory," established by the Pharmaceutical Society and endowed by subscription; the first of these were offered in 1861 and they have been awarded annually ever since, save for a lapse of one or two years during the Great War; since 1924 the two scholarships have been merged into one in order to conform to the changing conditions of pharmaceutical education. This scholarship gives the holder free education at the Society's School and a grant of money, as well as the "Hills Prize" of books, to which reference has already been made; to many a young fellow it has given the chance of his life; much is expected of the Bell Scholars and there is not often any reason for disappointment; many of them in later life have become famous in pharmacy or in other professions. It is interesting to read the list of Jacob Bell Scholars on the board in the Lecture Theatre at 17 Bloomsbury Square and pick out here and there some well-known names; it is impossible to refrain from mentioning a few here. The first Scholar was William Augustus Tilden in 1861; he became a demonstrator in the School under Dr. Attfield and in after life was famous as a chemist, being professor of Chemistry and dean of the Royal College of Science, London, professor emeritus of Chemistry in the Imperial College of Science and Technology, and author of "The Progress of Scientific Chemistry in Our Own Times," "Introduction to the Study of Chemical Philosophy," "Chemical Discovery and Invention in the Twentieth Century," "Famous Chemists—the Men and Their Work," etc.; he was knighted and made a Fellow of the Royal Society; he died in 1926. S. Plowman and A. P. Luff were Bell Scholars in 1872 and 1873, respectively; each in his turn won the Periera Medal and left pharmacy to enter the profession of medicine; the former became a surgeon, the latter at one time acted as Lecturer on Forensic Medicine to St. Mary's Hospital, London. One of the 1875 Bell Scholars was Henry George Greenish who, after leaving the School studied on the Continent, returned to the School in 1890 to become professor of Materia Medica and has remained there ever since, being appointed professor of Pharmaceutics in 1900 and later dean of the School, which offices he still holds; during his deanship the School has become a part of the University of London; he is a Fellow of the Linnean Society, has received the Hanbury Medal and holds the degree of Docteur (H.C.) de l'Université de Paris; he was Joint-Editor of the British Pharmacopœia 1914; he is much revered and beloved by the many hundreds of "Square" students who have come in contact with him. In 1880 F. C. J. Bird and J. O. Braithwaite were fellow Bell Scholars; both have been and still are active workers in connection with the British Pharmaceutical Conference; Braithwaite is best known as being, for many years, one of the editors of the Year Book of Pharmacy. Edmund White, one of the staunchest supporters the Pharmaceutical Society has ever had, was one of the Bell Scholars of 1886; he served on the Board of Examiners, was a member of Council of the Pharmaceutical

Society becoming president 1913–1918, and chairman of the British Pharmaceutical Conference 1923–1925; he was connected closely with all the activities of the Society until his death recently. In 1890, Edward Frank Harrison was a Bell Scholar; his name will always call to mind his work during the Great War, when, holding the rank of Lieutenant-Colonel and being Controller of Chemical Warfare, he invented the perfected Small Box Respirator, which will be gratefully remembered by every soldier; he died at the age of fifty from pneumonia aggravated by exposure to poison-gas, and on Nov. 2, 1921 a memorial to him was unveiled in the Examination Hall at 17 Bloomsbury Square by the then Secretary for War, Sir Laming Worthington-Evans. Dr. George Senter, now Principal of Birkbeck College of the University of London and a member of the Board of Examiners of the Pharmaceutical Society, was a Bell Scholar in 1895; in 1896 F. A. Upsher Smith held one of the Scholarships; he is well known to pharmacists in this country as the proprietor of a Digitalis Farm in Minneapolis. Thomas Tickle, John Evans and Horace Finnemore, Bell Scholars in 1892, 1897 and 1898, respectively, have all served on the Board of Examiners. C. H. Hampshire, a member of the Board of Examiners, who entered the medical profession and is now secretary of the British Pharmacopœia Commission, was one of the 1905 Scholars. In connection with the younger generation of Bell Scholars, it may be mentioned that F. Wokes (1912) and F. J. Dyer (1919) are working in the Pharmacological Laboratories of the Pharmaceutical Society, B. W. Melhuish (1916) is still on the staff of the Society's School and G. R. Boyes (1917) is now one of the secretaries to the British Pharmaceutical Conference; Hugh N. Linstead, secretary and registrar to the Pharmaceutical Society, was a 1921 Scholar; other Scholars hold positions in wholesale houses, research laboratories, schools of pharmacy, etc. More names could be cited did space permit; the writer of this article does not fail to remember with a sense of pride that she held one of the 1917 Scholarships, remaining at the Society's School until 1925; for this reason it has been a great pleasure to her to gather up the information set down here.

EX-PRESIDENTS OF AMERICAN PHARMACEUTICAL ASSOCIATION FROM BALTIMORE AS I REMEMBER THEM.*

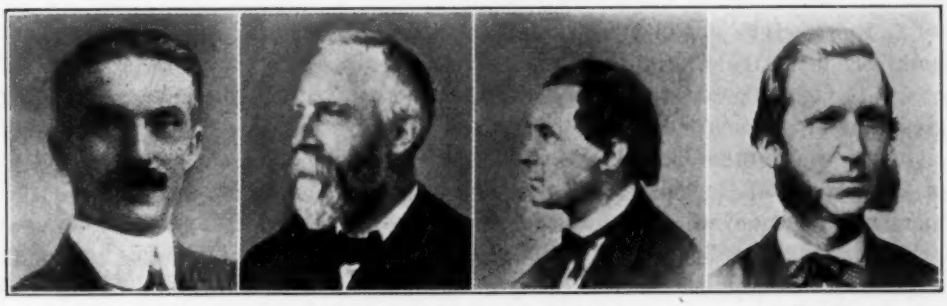
BY DAVID M. R. CULBRETH, M.D.

Of the seventy-eight presidents that have served this ASSOCIATION in as many years, only six have been chosen, *ad interim*, from Baltimore—just one more than the number of her accredited intermittent visits. While selection is made through compliment and merit, usually at the place of meeting to carry duties for a year hence, there have been occasional departures, at least temporarily, owing to well-meaning efforts going awry, until predicated justice could prevail. Thus, while of this favored contingent, Messrs. Andrews, Moore and Charles E. Dohme, came into their own according to this precedent—at Baltimore meetings—Mr. Hancock was elected at Richmond to serve at Louisville, Mr. Roberts at Pittsburgh—for Providence, and Dr. Dunning at Rapid City, in advance—for Baltimore.

Even though the terms of these six gentlemen have an interrupted inclusiveness of seventy-five years, it so happens that the writer knew and associated intimately for years, in their mature manhood, with all except Mr. Andrews, who enjoyed a slightly antidated period. However, as a fact, he died a few months after I, a young man, reached Baltimore to make it my future home, when, and subsequently, I heard so much of his final illness, honorable career and exceptional record, that the feeling has always been of personal friendship, as well as—a true knowledge in the flesh. Although this review aims to include only the non-living—the first five—it is fitting to add that our present—president, Dr. Dunning, still young, capable and enthusiastic, has already contributed commendable activity in

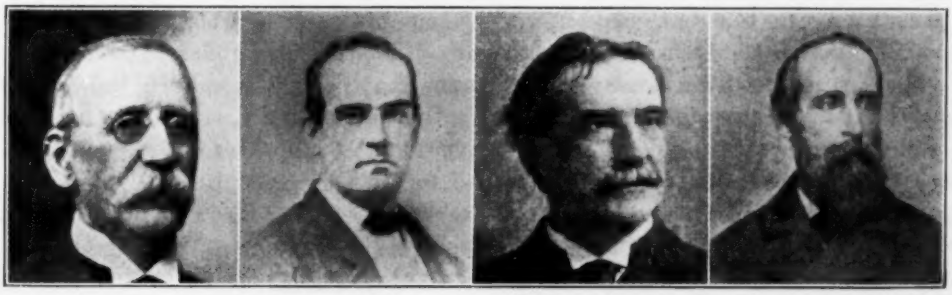
* Read before Section on Historical Pharmacy, Baltimore meeting, May 1930.

various pharmaceutical directions and faces a future of larger accomplishment, while Dr. Alfred R. L. Dohme, who being elected First Vice-President, 1917–1918, succeeded in mid-term, at the death of the then president, Charles Holzhauer, November 19, 1917, to all of the concluding official duties, which he performed with marked ability and satisfaction. Dr. Dohme, like Dr. Dunning,[1] is comparatively young, energetic and enthusiastic, with many successes to his credit and others to follow, so that we may predict for both gentlemen—a long, long wait ere the historian records deserving plaudits of "all things said, done and finished."



A. R. L. DOHME. CHARLES CASPARI, JR. GEORGE W. ANDREWS. J. FARIS MOORE.

In taking inventory of the past Baltimore pharmaceutical outlay—presidential timber for this ASSOCIATION—one cannot escape Charles C. Caspari, Jr., Albion J. Corning, Louis Dohme, Columbus V. Emich, Henry P. Hynson, Elisha H. Perkins, James C. Rogers and others, who, had conditions favored, could have borne her banner with credit and distinction. But it was from the type that choice had to be made, and in that fortunately—no mistakes appeared. Of the five personages to be considered here, each stood for high ideals and the adoption by this ASSOCIATION of the best measures to govern the progress and interest of pharmacy for the benefit of mankind; each possessed individuality, characteristic humane traits, possibly eccentricities, without serious accentuation, save in friendship and a desire to render honest public service, so that with abundant side-lights to illumine and guide, they lived and bequeathed a beautiful memory of ability, comradeship, efficiency and industry. They meant more to their community than simply druggists. It is for what they were and upheld in this organization that they especially should be recalled and remembered.



JOHN F. HANCOCK. JOSEPH ROBERTS. CHARLES E. DOHME. FREDERICK STEARNS.

[1] See January JOURNAL, 1929, page 2, for photo and sketch.

I. George W. Andrews (1800–1877); President 1856–1857.—This gentleman in spite of absence from the organization meeting, Philadelphia, October 6, 1852, was elected, simply from his well-known reputation and sympathy for the cause, its initial First Vice-President, a position that practically assured a further recognition—that which materialized five years later, September 9, 1856, by being chosen president, to preside at the 5th Annual Meeting, Philadelphia, September 8, 1857, *aet.*, 57. However, this duty, owing to a prolonged stay in Europe, he was unable to discharge, which, in course, the First Vice-President, being sick, devolved upon the Second Vice-President, Frederick Stearns. Mr. Andrews was of medium height and weight; small type, smooth face but abundant blackish hair, suggestive of a toupee; always quiet, serious, but responsive—indications of the thoughtful, resourceful student; devoted much time to chemistry, making many important analyses, being recognized in that line to have few equals in our city. He was a member of the Maryland Academy of Sciences 55 years, president of the Maryland College of Pharmacy 31 years, and chief proprietor of a large, lucrative pharmaceutical establishment 52 years, throughout which he was held in high regard by men of letters, physicians, the public and his many apprentices—among them none being more out-spoken than Messrs. Moore and Charles E. Dohme.

Evidence is lacking that he prepared an address for the Philadelphia meeting, or conveyed to any one certain thoughts he wished developed, even though he inclined, whenever opportunity presented during his entire business life, to make important contributions to chemical and pharmaceutical literature.

Mr. Stearns' remarks covered one printed page, 500 words, and no doubt was given *ex tempore*, in which he: "congratulated the assembly upon the goodly numbers from the West, North and South, all having one common object—the elevation and improvement of pharmaceutical science; hoped for unity in deliberations, also a growth that would soon rank our ASSOCIATION among the most important, useful and scientific in our country, creating an influence toward elevating us as professional men and in promoting the public welfare; with final emphasis upon the abundant material in the hands of the several committees (standing, special executive, progress of pharmacy, etc.) which he believed to be sufficiently important and interesting food for all."

II. J. Faris Moore (1826–1888); President 1863–1864.—This gentleman, of loosely built frame and broad shoulders, gave the impression at once—of being a real man; about 5 feet 9 inches in height, 170 pounds in weight, with a fine suit of sandy hair, often a trifle long, and side-whiskers of good length, both toward the last, mixed with gray—no moustache—florid complexion, agreeable, middle gamut voice, slightly husky and monotonous, without inflexion; cheery smile, often audible laughter; plain practical easy-going habit—satisfied with simple living and surroundings; careless in business dress, but in a well-modeled black suit and silk hat impressed considerable ministerial dignity; he was a power in the Presbyterian church, void of envy or jealousy, and bore friendliness toward all druggists; very democratic, easy of approach, with much natural ability, making without apparent preparation effective religious, educational and political addresses with ease and composure, that which established deserved popularity. He knew his Bible and Pharmacopœia, and of the latter, having manufactured the

preparations in various ways, retained clearly the several *modus operandi*, while his ready tongue found the ASSOCIATION meetings a happy outlet for personal knowledge and views. He was elected president, Baltimore, 1863, and presided at the 12th Annual Meeting, Cincinnati, September 21, 1864, *aet.*, 38. His address was remarkable for brevity, shortly over two printed pages, and a lack of appreciative value. After regretting a continuance of the Civil War he: "hoped before we again assemble the blessings of peace may once more visit our land and we may be permitted to meet with friends long separated from us, and enjoy all the benefits of association so long denied us, and mourned our deceased members—Dr. Franklin Bache, *aet.*, 72, John Meakin, *aet.*, 61, but felicitated the prosperous condition of the Treasury—a large balance for the coming year," and suggested (1) withholding the PROCEEDINGS from all members in arrears for more than three years, (2) reducing the annual dues to one dollar, after ten years' membership, (3) taking definite action on resignation of members while in arrears—making a final plea for higher preliminary requirements for those entering upon the study of pharmacy. "Many being so woefully deficient in their general education; for pharmacy is a science, and in that one word is embraced a host of collateral branches of knowledge, the attainments of which are indispensable to him whose ambition aspires to the title of pharmaceutist in its proper sense."

III. John F. Hancock (1834–1924); President 1873–1874.—This gentleman of 165 pounds, 5 feet 9 inches in height, was well-proportioned and always neatly groomed, with full face, broad forehead, and a thick suit of dark brownish hair and moustache, both ultimately gray; clear, light complexion, inviting nature filled with kindliness; deliberate action and speech, alert, comprehensive mind, familiar with and always ready to discuss intelligently, civic, educational and pharmaceutical problems; at times a trifle discursive, but ever gentle and considerate of opponents; versatile and well-informed on many subjects; deeply interested in municipal, charitable, public and professional questions; tongue very responsive but deliberate, using choice correct English in a self-possessed manner—as a rule, saying something quite worth while, qualities that made for confidence and commendation. He joined the ASSOCIATION, Baltimore, 1863, and ten years later was elected president, Richmond, presiding at the 22nd Annual Meeting, Louisville, September 8, 1874, *aet.*, 40. Just as Dr. Moore's address was impressively short, two printed pages, so Mr. Hancock's was correspondingly long, thirteen printed pages, being a most masterly history of medicine and pharmacy, including the parts played by Aesculapius, Hippocrates, Galen, Aristotle, Avicenna, Paracelsus, School of Salerno, etc., and stressing (1) the humble station of the early pharmacist: of whom, had there not been an occasional reference in sacred and profane history, nothing would have ever been known.

There was an ancient pharmaceutical art, but no science or organized bodies to promote trade or educational interests, as the apothecary and druggists were under the supervision of physicians by whom the *pro rata* numbers and charges were regulated and they themselves denied a share of the pharmacists' profits—once in such glaring abuse; (2) the advantages of organizations, like this, and colleges of pharmacy, both modern creations and so helpful in establishing an honorable independent existence commensurate with the more elevated learned professions; (3) the ancient secrecy in medicine, transmitted from father to son

with solemn oath not to divulge its mysteries—certainly a contrast to our day, when all knowledge is practically common property, no longer a possession of the few to be used as the chain of human slavery and to advance personal ambition to the injury of the masses; (4) the uncertainty of pharmacy's future—physicians to prescribe only simple palatable remedies, carried in a case along with them, and relying mainly upon the recuperative influence of nature under favorable hygienic regulations—a condition I cannot believe to be possible; (5) the disorganization of pharmacy, as at present practiced in all parts of the United States—commercial *versus* professional interests; (6) the importance of a good knowledge of Latin; (7) the laws to regulate the practice of pharmacy; (8) the higher standard of preliminary knowledge of college students to matriculate; (9) the growing friendship of physicians towards pharmacists; (10) the best method of marking unusual doses on prescriptions; (11) the scientific literature of the past year—chemistry, materia medica, etc. (Jesuits bark, eucalyptus, chloral hydrate, etc.); (12) the centennial of Priestley's discovery of oxygen, August 1774; (13) the death of noted members: Edward Parrish, William Procter, Jr., etc.; (14) the circularizing pharmacists towards increasing our membership."

IV. Joseph Roberts (1824–1888); President 1885–1886.—This gentleman, of rugged stout build, was 5 feet, 10 inches in height, 175 pounds in weight; smooth full face, high forehead and firm resolute upper lip; manner slightly brusque, speech clear, deep, penetrating, hurried, abrupt; mind forceful, thoughtful, serious, almost morose, without levity; quick in determining questions, as he was wont to say: "let us take the bull by the horns"—settle the matter now; judgment good, cautious, reliable; keen in resenting imposition or intentional slight; shirked no duty or obligation, the more disagreeable the more exacting the observance. Although a graduate of the New York College of Pharmacy he appreciated highly the presidency of our college, as he did the presidency of this ASSOCIATION, and strove earnestly to live up to the demands of all positions. He divided time between his drug store and a detached business, which claimed most of the day, while a farm in the "Neck" near Sparrows Point, gave healthful diversion—summer and winter. His occasional contributions to pharmaceutical literature were creditable, since he was greatly interested in the various phases of educational and college training.

He was elected president of this ASSOCIATION, Pittsburgh, 1885, and presided at the 34th Annual Meeting, Providence, September 7, 1886, *aet.*, 62, when the writer vividly recalls hearing him read his address, seven printed pages, and the special emphasis upon portions he considered most deserving. After a worthy tribute to the departed members he regretted the depressed and unremunerative condition of pharmacy, due, he thought to increasing demand and consumption of proprietary medicines, sold on small margin (owing to close competition) at the sacrifice of better paying prescriptions, and then discussed (1) the value of physicians endorsing and prescribing Pharmacopœial preparations; (2) the lack of the ASSOCIATION'S proper growth, due, he believed, to its preponderating scientific trend—that which should not be, as all interests are interwoven and should equally be looked after even though the social features be lessened; (3) the tendency of the ASSOCIATION'S management drifting into the hands of a few; (4) the evil of the ASSOCIATION establishing a *reserve fund* not less than $25,000, for im-

pressing stability, permanence and, if need be, partial defraying of entertainments; which he apprehended might lead to extravagant expenditure, competition and possible disruption; that "pay as you go" is best for persons and organizations, allowing posterity to look after itself, as was the original intention, and as we are now doing—depending upon local hospitality of our brother pharmacists at the place of meeting; (5) the advantageous service of State Pharmaceutical Associations, a real new factor in progressive pharmacy that, with its interchange of committees, will prove an adjunct to this ASSOCIATION; (6) the apparent delay in publishing our PROCEEDINGS, which, owing to size is unavoidable. He then advised (1) abolishing initiation fees, and reducing annual dues—both to be simply sufficient to meet current expenses, (2) a liberal and just policy towards the majority of the pharmacists' interests, whose moral and pecuniary support, when confronted with our appeal in a wise cause, will be responded to most liberally—a *perennial fund* through goodwill and abundant new members being more salutary, far better than a *reserve fund*, (3) the permission of pharmaceutical journals to use our papers and deliberations in advance of our published PROCEEDINGS, since this will avoid delay of material reaching pharmacists, establish a more friendly relationship, and thereby aid our own interests, (4) establishing a secondary Committee of Revision of the Pharmacopœia to collect and record all criticisms and suggestions for the *new revision*, to make reports to this body and a final one to the authorized Committee of Publication prior to the Convention of Revision, (5) amending By-Laws—that no elected member of the Council be eligible to reëlection within one year after expiration of his former term, thus minimizing centralization, (6) appointing a Committee of Materia Medica, or Pharmacognosy, five members, to investigate and report the value of new remedies, (7) against the multiplicity of colleges of pharmacy that tends to lower our accepted standards, (8) against a spirit of commercial rivalry and a competition for students.

V. Charles E. Dohme (1849–1911); President 1898–1899.—This gentleman was of large frame and stature, 5 feet, 10 inches in height, 220 pounds in weight; full face, broad, massive forehead; thick black hair and moustache, florid complexion; deliberate action, at times almost phlegmatic, but when necessary very alert and responsive; capable and efficient at any undertaking, with considerable personal magnetism; retentive memory, close reader; fond of literature, history, biography, even classic fiction; well-educated by study and travel, fine critic of art and music, with a trained deep bass voice used most effectively in oratorios, choirs, etc.; spoke German and pure English fluently; an affable engaging host—cherry disposition that on occasion could be impulsive—almost explosive; easy of approach, willingly imparting helpful knowledge acquired possibly by long laboratory and other experience, even when regarded as private. He was a graduate of our College, its able president for years and promoted its welfare in many ways.

He was elected President of this ASSOCIATION, Baltimore, 1898, and presided at the 47th Annual Meeting, Put-in-Bay, September 4, 1899, *aet.*, 56. His address, eight printed pages, was thoughtfully prepared and well-received, in which he: (1) felicitated our country and association members for trade and commercial prosperity—happily shared by many pharmacists after a long waiting period; (2) expressed gratitude for success in our Spanish-American War and to Mr. Roosevelt for his imperialistic pronouncements, even though they antagonized Washing-

ton, Jefferson, Madison and Monroe—not to interfere with European affairs. For these times differ from those, since we are now a world power in helping to shape international policies and relations, and in extending civilization—with a duty to take up the "white man's burden," to bear it manfully and cheerfully. We must transplant our many important pharmaceutical processes and galenicals, the result of our skill and ingenuity, to other countries; (3) congratulated our colleges of pharmacy for high-grade work. Those trained graduates are to extend an influence to benighted peoples that we are to enlighten and civilize, thereby giving an outlet for our excess of pharmacists, who, in a few years, will establish stores in the West Indies and Philippine Islands, only to spread the fame of our country and its colleges, (4) welcomed, in spite of the unfriendly attitude (its constitution excluding college professors and manufacturers) our competitive association, the National Association of Retail Druggists, in its hopeful ambition to make drug stores yield handsome incomes, and to remedy the cut-rate evil, neither of which our ASSOCIATION, in spite of desperate efforts, has been able to accomplish. We have ameliorated, even exterminated, some negative conditions, and will always try to be helpful, but I deny the press articles that claim—this ASSOCIATION not to be for the retail pharmacist, but simply for college professors and large manufacturers. For, as a fact, no one class of our members is benefited more than another—all profit by personal contact and interchange of scientific views. It is true, that all of each class have not gained equally, as some have moderate ability, unable to cope with competition, and all are subject to Darwin's law. Our ASSOCIATION may foster and encourage the commercial branch, improve business, but it must not neglect the scientific side.

Compare our knowledge and the armamentarium of the physician and pharmacist of fifty years ago with the present—all due to science. We must continue to grow in efforts to open the crannies and let the light in to all sections (scientific, educational, legislative, commercial and practical pharmacy) each being looked after with increasing interest, and concluded by urging Congress to adopt the metric system of weights and measures, with comments upon the Pure Food and Drugs Congress, the Committee of National Legislation, date of Annual Meeting, death of prominent members and means of increasing our membership.

FLUECKIGERIANA.*

BY EDWARD KREMERS.

V. Flueckiger letters to Power, 1882–1890.

Strassburg, March 25, 1885.

MY DEAR FRIEND:

Your letter of the 27th arrived just at the beginning of our holidays (1), so I am pleased to devote an hour to a reply. I am glad, however, that only my letter has to proceed to Madison, for —10 or —20° F. would by no means suit me; I am quite satisfied with the winter in this country where we had no more cold than, say +10° F. for a few days only and no snow at all.

I am glad to learn that you are pretty well and, now, not too much busy (2). But as to the "Pharmaceutische Chemie" you must not suppose that I am so strong a worker as you (3). There is so much to improve and to reconsider and to add that my progress is but very slow. 260 papers (4) are ready and nearly 600 more are to be dealt with! I doubt whether I shall be

* Continued from the January JOUR. A. PH. A., page 8.

able to accomplish this task before the beginning of the next year. I shall be very much pleased to see the book translated by you and will certainly inform you as soon as I shall be able to fix the date of the end of my task. And then we can easily arrange so that you receive sheet by sheet (5) as soon as they are printed. Printing and publishing (6) take at least 6–8 months in Berlin, so that your translation can be ready at the same time when the book makes its appearance in the German market.

Yes, the new University buildings are very handsome and even some very slight improvements in the Pharmaceutisches Institut (7). I have a much better room (8) and laboratory than formerly. I am about to write a pamphlet against the way in which Pharmacy is treated in this country (9).

Dr. Meyer is about to leave me for the University of Goettingen (10), where he has been appointed an assistant to the "Pflanzenphysiologisches Institut." He gets there a little—less, than he got here! Besides he will be a Privatdocent, fuer "Pflanzenchemie," also a position which will not bring any appreciable amount of money. That is what they call a career in Germany. It is true that very likely, Dr. Meyer will in a few years more get an appointment as a professor; in the meantime he is *now* about 36 old!—I am not very sorry to see him leaving; I think it is not always a good plan to have an assistant for so many years.

I suppose the burnt parts of your University have been rebuilt long ago? (11)

Mr. Todd (12) has also sent to me very good specimens of his menthol although I objected very strongly to his fancy to term it "pipmenthol" and observed to him that he was entirely wrong in supposing his product to be anything else than—menthol.

I requested Mr. Todd to send me some herbarium specimens of the mint from which the oil is distilled; he promised to send them, but failed in doing so. I do not think it remunerative to make Menthol from the American oil and advised Mr. Todd to cultivate the japanese Peppermint plant.

There will be at Strassburg, on the 17–22 of September, next, a meeting of the German Naturalists (13), a special pharmaceutical section will also be formed at that occasion. I do not expect you to attend that meeting, but perhaps you will be pleased to send some contribution of any kind, written, printed or a specimen of an interesting drug or preparation to be laid before the meeting. It would be nice to have such a communication from the far West.

My wife unites in kindest regards to you and Mm. (14) Power. Believe me to be

Yours very truly, F. A. FLUECKIGER.

---

(1) Whereas in American universities the second semester follows the first without any break other than that necessitated by examinations and registration, German professors enjoy a longer interval. This spring vacation is also known as Easter vacation. German university professors not infrequently made use of part of this vacation to go south. Hence, *e. g.*, Flueckiger's "Osterferien im Sueden" (1889), also "An Easter Holiday in Liguria" (1877). It must not be assumed, however, that vacations were given to pleasure primarily or even to rest. Vacations were long to enable both teacher and student to work: the former to attend to his literary activities, the latter to study, *i. e.*, to digest the lectures which he had been attending during the previous semester.

(2) In 1885 the University of Wisconsin had the three-term system of about three months each and the pharmacy students were in residence during the fall and winter terms only. Inasmuch as the winter term closed with the end of March, Professor Power had no instructional duties during the spring term which extended to commencement late in June. Since the course, *e. g.*, at the Philadelphia College of Pharmacy was even shorter and demanded fewer hours by far while it lasted, Professor Power, in arranging the pharmacy course in 1883, apparently thought it wise not to demand more time of the pharmacy student. This, however, left him free during half of the calendar year to indulge in such work as he thought worth while. Apparently he had again written to Flueckiger about the translation of the "Pharmaceutische Chemie" which task he would have been free to attend to during the spring term and summer vacation. (3) At this time Flueckiger was 56 years of age. (4) Flueckiger evidently refers to monographs.

(5) Flueckiger here uses the literal translation for "Bogen." The printer's "Bogen," however, is the form. (6) Binding is no doubt intended.

(7) This reference is to the old institute. The new institute was erected during Prof. Schaer's professorship. (8) At the time of the twenty-fifth anniversary of the reorganization of Strassburg as a German university in 1897, *i. e.*, almost three years after Flueckiger's death, Power returned to his alma mater in the Rhine valley. In his write-up of the festivities (*Ph. Rev.*, 15, No. 7) "The Kaiser Wilhelm's University of Strassburg" he refers to the new buildings dedicated in 1884 and then adds: "To those interested in the advancement of pharmaceutical science it is a matter of disappointment and regret that this department is the only one still unprovided with a new building, for it continues to occupy the very inadequate quarters of the old *École de Pharmacie*, where Pasteur taught nearly fifty years ago. The hope is entertained, however, that these requirements may also soon be appropriately met" (page 9 of reprint). When the writer revisited Strassburg in 1907 Pharmacy occupied a new building. (9) See letter dated Feb. 7, 1886. (10) Meyer did not stay long at Goettingen. See footnote No. 7, page 1132. (11) "Old" Science Hall had been destroyed by fire in Dec. 1884. "New" Science Hall was not occupied until the spring of 1888. (12) Albert B. Todd of Kalamazoo, Michigan, the well-known distiller of peppermint oil.

(13) The "Verein Deutscher Naturforscher und Aerzte" was called into being by Oken in 1822. At an early date attempts were made to organize a pharmaceutical section. The ups and downs of this Section have been reviewed in his usual thorough fashion by Georg Urdang who read a paper on "Hundert Jahre Abteilung Pharmazie der deutschen Naturforscherversammlung" before the Section at the last annual meeting of the Society, Sept. 10, 1930, at Koenigsberg. This paper was published in the *Pharmazeutische Zeitung* No. 78, 1930. On pages 5 and 6 of the reprint, Urdang calls attention to the reorganization of the Section at Strassburg in 1885. It is to this meeting that Flueckiger refers and for which he makes propaganda by inviting Power to send a contribution. (14) Abbr. for Madame. Both Bern, Switzerland and Strassburg, the two places in which Flueckiger spent by far the greater part of his life were strongly under French influence. Hence the use of Mm. for Mrs.

HYDROGENATED OIL AS AN OINTMENT BASE.*

BY GEORGE W. FIERO.**

There is a long-felt need for a satisfactory ointment base. None of the bases employed by the U. S. P. is entirely satisfactory for all purposes. Lard has been used for a large number of ointments but has the disadvantage of the tendency to develop rancidity. Attempts to preserve lard by the addition of other substances has not been satisfactory; benzoin is used as a preservative for lard in many ointments and has been found to retard, but does not entirely prevent the development of rancidity. This is indicated by the fact that only fifteen of seventy-five samples of sulphur ointment (prepared with benzoinated lard) purchased at retail pharmacies were free from rancidity. Over four hundred samples of lard containing various quantities of a number of substances as preservatives were allowed to stand unstoppered for a period of 25 weeks; rancidity developed rapidly in all samples except those containing guaiacol, creosote, oil of clove and resorcinol.[1] Husa[2] reports that most attempts at preserving lard have been unsatisfactory.

Other substances frequently employed in ointments are wool fat and petrolatum. Neither of these substances is a true fat (wool fat being a cholesterol and petrolatum a hydrocarbon) and hence are not readily susceptible to rancidity. Wool fat has been found by many experimenters to be a very absorbent base and hence is valuable for many ointments. However, it possesses certain disagreeable properties, such as its very tenacious consistency and characteristic odor. Petrolatum has been used for a large number of ointments but has been found to be practically non-absorbent.[3] In most cases it is desirable to use an ointment base which will penetrate the skin, carrying the medicaments with it or acting as a medium through which they can pass.

Rancidity.—The rancidity question is definitely related to ointments, since rancid fats not only have a disagreeable odor but also develop irritating properties which render them unfit for application to the skin. The exact nature of rancidity is not definitely known, as is indicated by a search of the literature. Certain factors seem to be necessary for the development of rancidity. Kerr and Sorber[4] and many others found that oxygen is necessary for rancidity and that the products of rancidity are, to a larger extent, oxidation products such as aldehydes, ketones and peroxides. Light has also been pointed out as a factor in the problem by Salkowski[5] and others. In the development of rancidity, it has been demonstrated[6] that fats develop acidity and that rancidity does not develop rapidly in absolutely dry fats, which indicates that moisture is a factor, and the acidity is a result of hydrolysis. Heat also seems to be a factor, and it has been pointed out that

* Department of Pharmaceutical Research, University of Southern California, Los Angeles. Part of a thesis presented to the Department of Pharmacy in partial fulfilment of the requirements of the degree of Master of Science.

** Assistant Professor of Materia Medica, University of Buffalo, Buffalo, N. Y.

[1] *Amer. Jour. Phar.*, 102 (1930), 146.

[2] Jour. A. Ph. A., 15 (1926), 1071; *Ibid.*, 18 (1928), 243.

[3] *Brit. Med. Jour.*, 2 (1911), 161; *Ibid.*, 1 (1908), 1225.

[4] *Ind. Eng. Chem.*, 15 (1923), 383.

[5] *Z. Nohu. Genussm.*, 34 (1919), 305.

[6] *J. Soc. Chem. Ind.*, 10 (1891), 29.

bacteria are the cause of rancidity, although it has been found that rancidity will develop in fat which is free from micro-organisms.[1] Metals also seem to increase the rate of development of rancidity.[2] This would indicate that fats susceptible to rancidity should be stored in non-metallic containers, air-tight, free from light, in a cool, dry place.

All fats do not develop rancidity at the same rate. The susceptibility of a fat to rancidity seems to be relative to the iodine number; fats with a high iodine number usually develop rancidity rapidly, those with a lower number being much less susceptible. Since halogens combine with the "double bonds" of the fatty acid radical, the iodine number is a measure of the extent of unsaturation of a fat. This would indicate that in rancidity the oxygen attacks the unsaturated carbon atoms, and rancidity is definitely related to unsaturation.

Hydrogenated Oils.—Fats with a high iodine number are often liquids, while fats with a low iodine number are usually solids. It has been found that a liquid fat with a high iodine number (such as olein) can be converted into a solid fat with a low iodine number (such as stearin) by passing a stream of hydrogen through the fat in the presence of a catalyst. Any desired consistency can be obtained by increasing or decreasing the amount of hydrogen. Chemically, the hydrogenated fat is more saturated than the original fat and hence should be less susceptible to rancidity. The physical characters of the product, such as is illustrated in household hydrogenated oil lard substitutes such as *Crisco, Velvet Shortening,* etc., indicates the possibility as an ointment base.

Experimental Procedure.—In order to ascertain the stability of hydrogenated oil to rancidity, samples were placed unstoppered in a warm, light place for twenty-five weeks. Lard under the same condition developed rancidity in about three weeks as indicated by the Kreis Test[3] and at the end of twenty-five weeks developed a very strong, disagreeable odor. The hydrogenated oil, however, did not develop rancidity as indicated by the Kreis Test after twenty-five weeks.

Hydrogenated oil with an iodine number of 75 prepared from cottonseed oil was used in these experiments. Physically, it was a soft, white, odorless fat of satisfactory consistency and melting near body temperature. Chemically, it was not susceptible to rancidity. Therapeutically, it was practically inert since cottonseed oil is used as a base for pharmaceutical liniments.

CONSTANTS OF HYDROGENATED OIL USED.

Specific gravity at 40° C./25° C.	0.901
Refractive index at 20° C.	1.4633
Iodine number	75.85
Saponification number	191.8
Halphen test	Negative
Melting point	36.5° C.

In order to determine the pharmaceutical application of hydrogenated oil, it was necessary to ascertain whether it is absorbed by the skin as compared with

[1] *Cotton Oil Press,* 5 (1921), No. 3, 45.

[2] *Ind. Eng. Chem.,* 14 (1922), 937.

[3] The U. S. Government test for rancidity: Equal volumes of melted fat and concentrated hydrochloric acid are shaken together; ethereal solution of phloroglucinol is added. A pink to red color indicates rancidity.

other ointment bases. This was done by a direct application method and compared with lard as a standard.[1] Lard was chosen as a standard because it has been shown to be an absorbent base and can be spread without difficulty. Wool fat cannot be spread easily because of its tenacity; petrolatum is practically non-absorbent.

Determination of Relative Absorption of Hydrogenated Oil.—A definitely weighed quantity (approximately one Gm.) of hydrogenated oil was applied to a definite area (16 sq. in.) of the human chest, which had been previously cleaned with ether. The weighed fat was then rubbed over the surface for a period of 150 seconds, the residue carefully scraped off and weighed. The difference in weights indicated the amount of fat absorbed. Simultaneously a similar quantity of lard was applied to the other side of the chest in the same manner. By comparing the quantities of each fat absorbed, a ratio was established which indicated the relative absorption of the two fats.

The value of this experiment depends, to a large extent, upon the care in treating each fat identically, using the same speed of rubbing, the same pressure, etc. It was found that the absorption ratio of the two fats was fairly constant even though the actual quantities of fats absorbed differed with each subject. The results are shown in Table I from which it can be seen that hydrogenated oil is approximately 73% as absorptive as lard under the conditions of the experiment.

TABLE I.—COMPARATIVE ABSORPTION OF HYDROGENATED OIL AND LARD APPLIED TO THE SKIN BY INUNCTION.

Subject.	Hydrogenated oil absorbed.	Lard absorbed.	H/L constant.*
A	0.2250 Gm.	0.2900 Gm.	0.722
B	0.2300 Gm.	0.3000 Gm.	0.767
C	0.1830 Gm.	0.2502 Gm.	0.731
D	0.1300 Gm.	0.1800 Gm.	0.722
E	0.1100 Gm.	0.2100 Gm.	0.505
F	0.1270 Gm.	0.1600 Gm.	0.793
G	0.2070 Gm.	0.2248 Gm.	0.833
H	0.1660 Gm.	0.2250 Gm.	0.737
I	0.2005 Gm.	0.2630 Gm.	0.762
Average absorption constant H/L			0.730

* The absorption constant (H/L) for hydrogenated oil as compared with lard is shown by the quotient of the amount of hydrogenated oil absorbed divided by the amount of lard absorbed.

However, since most ointments are used therapeutically by applying them to the skin and allowing them to remain there without prolonged rubbing, the above method was modified. The fats were rubbed for 20 seconds evenly covering the surface and allowed to remain without additional rubbing for 130 seconds. The fats were then carefully scraped off, weighed and the absorption constant calculated. The results are shown in Table II. It was found that the absorption constant for hydrogenated oil was greater than that of lard, being 1.112 times more absorptive.

[1] Other methods for comparative absorption of hydrogenated oil determination being carried on at present time.

TABLE II.—COMPARATIVE ABSORPTION OF HYDROGENATED OIL AND LARD APPLIED TO THE SKIN WITHOUT RUBBING.

Subject.	Hydrogenated oil absorbed.	Lard absorbed.	H/L constant.
A	0.1130 Gm.	0.1100 Gm.	1.027
B	0.1050 Gm.	0.0840 Gm.	1.250
C	0.1030 Gm.	0.1005 Gm.	1.024
D	0.1500 Gm.	0.1500 Gm.	1.000
E	0.1421 Gm.	0.1177 Gm.	1.207
F	0.1150 Gm.	0.1100 Gm.	1.045
G	0.1220 Gm.	0.1030 Gm.	1.184
H	0.1366 Gm.	0.1280 Gm.	1.067
I	0.1080 Gm.	0.1020 Gm.	1.059
J	0.1300 Gm.	0.1110 Gm.	1.261
Average absorption constant H/L.....			1.112

Table III shows the results using the modified method, employing a simple ointment consisting of hydrogenated oil 80%, white wax 10% and wool fat 10%. It was found that this ointment was slightly more absorptive than the pure hydrogenated oil, probably due to the wool-fat content.

TABLE III.—COMPARATIVE ABSORPTION OF A SIMPLE OINTMENT AND LARD BY APPLICATION TO THE SKIN.

Subject.	Ointment absorbed.	Lard absorbed.	O/L constant.
A	0.0700 Gm.	0.0600 Gm.	1.167
B	0.1280 Gm	0.1080 Gm.	1.157
C	0.0750 Gm.	0.0700 Gm.	1.071
D	0.1100 Gm.	0.0960 Gm.	1.145
E	0.0800 Gm.	0.0680 Gm.	1.176
F	0.1260 Gm.	0.1160 Gm.	1.086
G	0.2600 Gm.	0.2200 Gm.	1.182
H	0.1700 Gm.	0.1530 Gm.	1.100
I	0.1350 Gm.	0.1190 Gm.	1.134
J	0.2000 Gm.	0.1800 Gm.	1.111
K	0.1800 Gm.	0.1700 Gm.	1.159
Average absorption constant O/L.....			1.149

Hydrogenated Oil as an Ointment Base in Official Ointments.—Ointments prepared with hydrogenated oil were found to have all of the attributes essential to good ointments. They were found to be more solid than ointments with a lard base, but melted more readily when applied to the skin. Ointments of hydrogenated oil did not develop rancidity or become granular like those with lard. Ointments prepared with a benzoinated lard base became rancid, but this deterioration was not as rapid as with untreated lard. Hydrogenated oil was found satisfactory for all U. S. P. ointments, the following being suggested particularly since the hydrogenated oil ointment was found superior to the official product.

Unguentum Belladonnæ.—In the last revision of the U. S. P. the base was changed from lard and wool fat to petrolatum and wool fat; the formula of the "British Pharmacopœia" is similar to that of the U. S. P. IX. This ointment is usually used therapeutically where absorption of the belladonna is desired and hence should have an absorptive base. Lard of the U. S. P. IX formula was replaced with petrolatum, a non-absorbent base. A very satisfactory ointment was prepared substituting hydrogenated oil for petrolatum in the official formula.

Unguentum Chrysarobini.—The base was changed from benzoinated lard to wool fat in the last revision of the U. S. P. It was found, however, that the official product soon developed a dark color which did not develop when prepared with hydrogenated oil substituted for the wool fat.

Unguentum Hydrargyri Ammoniati.—The U. S. P. and the German Pharmacopœia employ petrolatum and wool fat, the French Codex petrolatum and the B. P. benzoinated lard. An ointment prepared with hydrogenated oil substituted for the petrolatum in the U. S. P. formula resulted in a very satisfactory ointment which was more absorbent and slightly less tenacious than the official product. However, if the ointment is prepared using hydrogenated oil and five per cent of white wax as a base, the resulting product has a beautiful white color, is odorless and has a smooth consistency, while that of the U. S. P. is very tenacious and has a decided wool-fat odor.

Unguentum Iodi.—The base of this ointment was changed in the U. S. P. X from benzoinated lard to wool fat. One of the reasons for this change was that lard has a high iodine number and tends to absorb the iodine of the ointment, while wool fat, not being a true fat, has a very low iodine number. This appears to be an unhappy change from a therapeutic standpoint since it has been found[1] that iodine is readily absorbed from lard but scarcely at all from wool fat. Hydrogenated oil, since the iodine number has been reduced by hydrogenation, would be a very satisfactory base, as lard and hydrogenated oil are somewhat similar in chemical constitution while wool fat is entirely different. A very satisfactory ointment was prepared using 75 Gm. of hydrogenated oil and 5 Gm. of wax in place of the 80 Gm. of wool fat in the U. S. P. formula. This ointment was possessed with a much smoother consistency than the official ointment.

Unguentum Iodoformi.—In the U. S. P. X the base was changed from benzoinated lard to petrolatum and wool fat. The B. P. employs benzoinated lard and the French Codex petrolatum. A very satisfactory ointment was prepared from a base consisting of 5 per cent of white wax with hydrogenated oil.

Unguentum Sulphuris.—This ointment, which is prepared with benzoinated lard according to the formulas of the U. S. P. X, the B. P. and the French Codex, is very unsatisfactory. As mentioned above, samples purchased in retail pharmacies were found to be rancid in most cases. This difficulty is overcome by some pharmacists who employ "benzoinated petrolatum" in their product. Such an ointment is not official, of course, and cannot be labeled as such; it is an obvious attempt at substitution since there is no reason for the use of benzoin other than to give the product the odor of the official ointment. Often a "compound sulphur ointment" is dispensed which is prepared from petrolatum rather than lard. The most satisfactory method of preparing the U. S. P. sulphur ointment is to manufacture it fresh when needed or to store it in the refrigerator in tightly stoppered, non-metallic containers. Sulphur ointment prepared with a base consisting of five per cent of white wax and hydrogenated oil was found to have satisfactory physical properties and, as could be determined by using in place of the U. S. P. product in several cases, to have satisfactory therapeutic properties.

---

[1] *Arch. Dermatol. Syphilis*, 62 (1904), 163; also *Z. klin. Med.*, 12 (1887), 276.

Unguentum Picis Pini.—The U. S. P. X changed the base from benzoinated lard to petrolatum, but the B. P. and French Codex employ benzoinated lard. The use of hydrogenated oil in this ointment was very satisfactory.

Unguentum Zinci Oxidi.—The U. S. P. X and the French Codex employ petrolatum as a base for this ointment, but the B. P., German Pharmacopœia, and the U. S. P. IX employ benzoinated lard. According to the "U. S. Dispensatory,"[1] if this ointment is prepared with an absorbent base, the base is absorbed which leaves a protective coating of zinc oxide, but with a non-absorbent base such as petrolatum, the skin remains greasy. Sollman[2] pointed out that dermatologists were divided in their opinion as to the relative value of lard and petrolatum as a base for this ointment, many claiming that, since zinc oxide is a mild antiseptic and astringent, an absorbent base is indicated. A very satisfactory ointment was prepared by thoroughly triturating the zinc oxide (20 Gm.), adding a small amount of molten hydrogenated oil, triturating until a smooth mass results, and adding the balance of the molten hydrogenated oil (70 Gm. total) and white wax (10 Gm.). The mixture is stirred thoroughly, strained through muslin and stirred constantly while cooling. The product is a beautiful, smooth, white ointment.

SUMMARY.

Hydrogenated oil (with an iodine number of 75) appears to be a fairly absorbent fat and a very good substitute for lard in pharmaceutical ointments. The physical and chemical properties of the fat also indicate its use. Many U. S. P. ointments were found to be very satisfactory when hydrogenated oil or a mixture of hydrogenated oil with wax were substituted for the official base. Its use is particularly indicated in those ointments which are susceptible to rancidity since hydrogenated oil and ointments containing it did not develop rancidity after exposure in open containers to air and light in a warm place for 25 weeks, while the same ointments prepared with lard became very rancid.

THE REVIVAL OF STUDY IN CHINESE MEDICINE.

The following is from *The Japanese Weekly Druggist.*

While people pursue after novelties, they also show their reverence for the past. This is the situation in the Japan of the Showa Era. And the drug world is no exception to this rule. While, on one hand, western medicine has been making a vast progress, much headway is also being made in the world of Chinese medicine. This was most clearly shown by the recent convention of dealers in prepared medicines held in Tokyo, whose committee resolved to present a petition to the Government in favor of establishing courses in Chinese medicine in colleges of pharmacy. The resolution contains the following:

"Among the numerous Chinese herbs, there are some which have been found to be efficacious through actual experience although their ingredients have not been examined as yet. This is why their use has continued to this day, and are found in the prepared medicines very extensively. But the majority of pharmacists lack proper knowledge in Chinese herbs to their great detriment in the execution of their professional duties, because they are not taught in their professional education. Because of this lack of knowledge, a maximum efficiency in medical efficacy is not gained. We urge the establishment of courses in Chinese herbs and pharmacology in addition to that in pharmacy."

---

[1] Wood and LaWall, "*U. S. Dispensatory*" (1926), 1144.

[2] *Jour. A. M. A.*, 75 (1920), 1420.

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

COMMENTS, QUESTIONS AND SUGGESTIONS ARE INVITED AND WELCOME.

Readers are invited to submit comments, criticisms and suggestions regarding the material which appears in this department. The Editor will also undertake to answer questions regarding general problems of business management. Letters of general interest will be published, but the writer's name will not be revealed without his permission.

A PROBLEM FOR MANUFACTURERS OF PRICE CUT MERCHANDISE.

BY PAUL C. OLSEN.

In the drug business the class of merchandise on which price competition is the keenest is, of course, standard identified items which are in wide demand. The apparent saving in the purchase price is thus immediately evident and, especially upon merchandise which large numbers of people are likely to buy frequently.

The attitude of manufacturers of this class of merchandise ranges, all the way, as everyone knows, from active encouragement of price cutting through complete indifference to aggressive opposition.

The purpose of this discussion is not to review the situation to-day with respect to price cutting in the drug trade but rather to indicate one important aspect of the situation as it exists to-day which, in my judgment, is not fully realized by all concerned.

Before detailing just what this aspect of the situation is, it is necessary to set down briefly some of the facts which create the conditions that exist to-day.

The great majority of retail druggists do not initiate price reductions on popular standard identified merchandise. They follow these price reductions only when aggressive price-cutting competitors compel them to do so and then only to a limited degree. Naturally, these steps are taken by them with the greatest reluctance and resentment.

It is obvious that the great majority of retailers in the drug trade therefore would welcome the coming of a condition which would make price cutting on popular standard identified merchandise impossible.

It is also obvious that if the full prices on popular standard identified merchandise could be obtained, the total profits of retail druggists would be greatly increased. This is a statement of the generally known fact that cut prices on popular identified merchandise in the drug trade do not increase the sales of that product to a volume sufficient to offset the reduced price. This fact is of particular importance in the drug trade because most of the items sold are of small purchase price, and the price cuts, while large, proportionate to the purchase price, are not large individually in amount.

On the other hand the very fact that merchandise on which price cutting is the keenest is in wide and constant demand is an indication that it is easy to sell and, therefore, that the costs of carrying it and selling it are much below the costs

* Lecturer on Business, Columbia University and Philadelphia College of Pharmacy and Science.

of carrying and selling other merchandise in the drug trade which, though it must be stocked, sells slowly and in small volume.

It is true, also, that some popular identified merchandise in the drug trade is sold at retail by aggressive price cutters at prices which are below the prices they pay for this merchandise. The losses resulting from this practice are customarily considered to be the costs of attracting business to the store—an advertising cost. Incidentally, the ethics of the loss leader is open to serious question and for obvious reasons.

With these preliminary statements it is possible now to consider the position of manufacturers of popular identified merchandise on which price cutting is aggressive.

A salesman for a well-known brand of tooth paste in calling on retail druggists frequently meets this objection. "Yes, I'll have to buy some of your merchandise but I certainly do hate to sell it. They're cutting the life out of it and every time I sell it there's an argument about the price."

It requires no particular amount of imagination to realize that the salesman will carry away from that store an order for the smallest possible quantity of that tooth paste with which that druggist believes he can meet the demands of those of his customers who will take that tooth paste and no other.

Remember I am speaking of the great majority of retailers, the group who do not initiate and are opposed to price cutting on popular identified merchandise.

Another way in which the attitude of this great majority of retail druggists expresses itself is in their relations with their wholesalers. Orders are given for such merchandise in thousands of instances in such absurdly small quantities that it is all sold and has to be re-ordered again within a day or two.

It is perfectly plain that a wholesaler who fills 12 orders in the course of a month, each for a quarter of a dozen of the same brand of tooth paste, is not going to make the profit from the transaction that he would if a single order were given monthly for a quarter of a gross instead of an order for a quarter of a dozen every two or three days.

Contrast this situation with the reception which is accorded a salesman with the following proposition. Smilingly he greets the harassed proprietor on a bright spring morning.

"Good morning Mr. Pharmacist. I have a proposition here which is an absolutely 'sure-fire' way to take business away from the price cutters and bring it back to your store where it belongs. I have here a tooth paste—as fine a tooth paste as anyone ever used. This tooth paste costs you not $4.00 or $3.60 or $3.56 a dozen but only $3.00 a dozen.

"We're only offering this tooth paste to one selected druggist in this locality. No cutter can get it. Do you think you'd have any trouble in getting your full price for this tooth paste? Remember you're the only store in this locality that has it. Customers will have to come to you to get it. No cutter has it or ever will have it.

"Here's a chance to make some real money, double your money in fact, because you get your full price and this tooth paste costs you 25 cents a tube."

It is little wonder that the druggist selling day after day dozens of tubes of popular tooth paste which costs him 30 to 33 cents for, say, 40 cents is tempted

by the enthusiastic salesman's proposition. Here's a chance to get a gross profit of 25 cents a tube instead of only 7 to 10 cents. It is little wonder that in a surprisingly large number of cases retail druggists invest $36.00 in just such propositions.

The one question that the druggist forgot to ask himself in considering the proposition was, "How much of this unknown tooth paste can I sell and how long will it take me to sell it?"

Even assuming he can sell it at all and actually does succeed in selling this gross of unknown tooth paste in a year's time, which any druggist who has tried to do it will say, vehemently, is an almost impossible task, there is still this to consider.

The total gross profit from the $36.00 he has invested in this new tooth paste which he obtains when, as and if he sells it, is $36.00 (he "doubles his money"). From this $36.00 must come the cost of carrying it and selling it and whatever profit is to be made.

If, on the other hand, $36.00 were invested in 2 dozen each of 5 leading brands of popular tooth pastes selling at wholesale for $3.60 a dozen, there is hardly a drug store in the entire United States which would not be able to sell the entire lot within one month's time and then repeat the process the next month, and then month after month for the whole 12 months of the year. Even if the druggist who bought 2 dozen of these 5 popular brands of tooth paste at a cost of 30 cents a tube is compelled, by competitive conditions, to sell them for 37 cents a tube, note the following facts:

The gross margin of 7 cents a tube amounts, on the entire purchase, to a total of $8.40. But this gross profit is earned within a month's time and the $36.00 investment in the merchandise is returned to the proprietor 12 times during the year so that he can repeat the process 12 times in a similar way.

This makes the annual gross profit from the $36.00 reinvested monthly in 2 dozen each of 5 popular brands of tooth paste 12 times $8.40 or $100.80. From this $100.80 has to be paid, of course, the cost of carrying and selling this merchandise, and whatever profits are to be earned from the investment.

Compare this $100.80 gross margin available from the $36.00 investment in 5 popular tooth pastes with the $36.00 gross margin from the $36.00 investment in the unknown tooth paste. Remember also that this $36.00 gross profit was achieved only if the tooth paste was all sold, and any druggist who has occasion to look over the surplus stock in his store does not need to be reminded of what a difficult thing this is to do.

Only one question needs to be asked now—"Would a druggist with $36.00 to invest in merchandise, prefer to put this $36.00 into merchandise on which the gross margin available for paying the expenses of operating his store and for his own profits could not be more than $36.00, even if the merchandise was all sold within a year's time? Or, would he rather put the $36.00 in 5 popular items of merchandise from which it was practically certain there would be returned to him a gross profit of $100.80 in a year's time with which to pay the expenses of operating his store and for his profits?"

Notice above that I have deliberately chosen a price for the tooth paste which is considerably below that prevailing to-day in most drug stores. It is easy to

see, for instance, the advantages of the situation when the customary price of popular tooth paste is not 37 cents but is, as it is in thousands of drug stores to-day, 45 cents.

The purpose of this article is to try to make clear that manufacturers of popular identified merchandise in the drug trade are losing selling opportunities and good will because they have not made clear to retail druggists who sell their merchandise the profit opportunities which are inherent in this merchandise, even at prices which are very materially below the customary gross margins of $33^1/_3$ to 40 per cent.

When a retail druggist says that he is interested in *price* maintenance, it signifies that he is interested in *profit* maintenance. It is thus clearly the responsibility as well as the interest of all manufacturers and wholesalers in the drug trade to make clear to retail druggists the profit opportunities which exist in the merchandise they make and distribute. Profits, it should be borne in mind, are determined not alone by gross margins, but also by volume and turnover.

VIRGIN ISLANDS AS SOURCE OF INSECTICIDES.

The possibility of establishing an insecticidal plant industry in the Virgin Islands to supply this country with important insecticidal materials, which are now imported at high cost from foreign countries, will be investigated by Dr. W. W. Skinner, Assistant Chief of the Chemical and Technological Research Unit of the Bureau of Chemistry and Soils, U. S. Department of Agriculture, who will leave Washington for the Islands on February 26th.

Dr. Skinner goes to the Virgin Islands at the request of the Department of the Interior, which recently was placed in charge of the Islands and which is seeking to rehabilitate the agriculture by the introduction of new industries to take the place of the production of oil for bay rum and sugar. These were formerly the leading native industries but have recently been suffering from the world depression and the over-production of sugar.

Doctor Skinner will investigate the possibility of aiding the islanders to rehabilitate the bay rum industry by assistance of a chemical character; he will study the situation with regard to the production of sugar; and particularly he will investigate the possibilities of growing such insecticidal plants as pyrethrum, derris and "cube," and the extraction from these plants of valuable insecticidal materials. He will also consider the advisability of establishing a chemical laboratory to aid such developments in the islands.

Scientists of the U. S. Department of Agriculture have found rotenone to be superior to materials now generally used in the United States for insect control. This new insecticide is found in quantities up to 7 per cent in the roots of the South American "cube" plant, and up to $5^1/_2$ per cent in derris roots. The derris and cube now grow in the Malay States and in parts of South America, and it is hoped that the climatic and soil conditions of the Virgin Islands will prove sufficiently favorable to allow the profitable production of this and other tropical insecticidal plants.

It is possible that Doctor Skinner may visit Trinidad where the British colonial experiment station is carrying on experiments in an attempt to grow derris for insecticide. On his return passage Doctor Skinner will visit Porto Rico to review the activities of the sugar laboratory of the Bureau of Chemistry and Soils at Fajarado where experimental work has been under way for several years, and will study the possibilities of developing a citrus by-product industry in Porto Rico.

The 1931 A. PH. A. meeting will be held in Miami, Fla., during the week of July 27th.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

This second paper on the "Teaching of Incompatibilities" presents the subject from a different point of view than that taken by Professor Husa in the recent paper in this Department. We are glad to present views of different teachers of important subjects in this Department of the JOURNAL and we welcome contributions from any teacher of pharmacy on any subject in the pharmaceutical curriculum. In fact, if space permitted, we would be glad to conduct in this Department an open forum on pharmaceutical teaching.—C. B. JORDAN, *Editor*.

TEACHING INCOMPATIBILITIES IN A TEST-TUBE.

BY W. PAUL BRIGGS.*

I take this liberty of commenting upon the article by Professor Husa in the January issue of THIS JOURNAL, not in a critical spirit but rather to cite my personal views wherein they differ from his.

Undoubtedly one of the principal problems of the teacher is to devise some logical plan whereby a great many types of incompatibilities may be studied without unduly prolonging the course and adding unnecessary burdens to the student. If 500 drugs will make 257,838,552,475 different combinations using from 1 to 5 items per combination, then upon this single point I am opposed to consuming time with test-tube dispensing experiments. I believe that most institutions now require Qualitative Analysis as a prerequisite to, or concurrently with, Dispensing Pharmacy. Assuming that this instruction is thorough and is properly correlated with Dispensing Pharmacy, review should be unnecessary. Personally I feel that it is most successful when given concurrently.

Obviously no one can attempt to present, or expect the student to know, every possible type of incompatibility. The greatest assistance an instructor can have in this field is the keen interest of the student in the subject, and with this as a foundation he can build up sound judgment and reason. Having this, the individual opinions find ready expression, not as a biased dogma, but as an analytical deduction.

My feeling is that if we start the course in Dispensing Pharmacy, upon which we are later to introduce Incompatibilities, with a broad enough scope to cover most types of preparations, we can point back to these in explaining many incompatibilities. In my courses this general plan is followed. Students starting in Dispensing Pharmacy, are first instructed in the necessary technic, after which they compound about 75 prescriptions in which I have tried to illustrate the most common types encountered. Detailed directions for compounding are given but the student is required to answer pertinent questions about the process and product which tends to impress upon him the fundamental reasons for the process followed. Following this, in the same course, the student compounds about 200 prescriptions, without directions for preparing, basing his methods largely upon those used in the beginning of the course. Most of these involve slight incompatibilities which

* Assistant Professor of Pharmacy, The George Washington University, School of Pharmacy.

are generally remedied by changing the order of mixing, adding small quantities of alcohol, glycerine, etc., emulsifying or suspending insoluble material. The majority of these prescriptions have been compiled from current prescription files and are frequently met with in the Pharmacy, thus removing the idea that there is no connection between the kind of Pharmacy one learns at College and the kind one practices in the retail store. Occasional hints and suggestions are given when these will expedite his work. The results are most gratifying. The student becomes prescription conscious and develops self confidence.

The student is required to record concisely his method of compounding and logical reasons for so doing. Frequently a prescription, which involves no incompatibilities but which is greatly improved by slight modification, is prepared as it would be "at the store," and again as the student thinks it should be, and the products compared. For example, Phenyl Salicylate, Bismuth Subnitrate and Camphorated Tincture of Opium with Peppermint Water as the vehicle, is prepared as written. Then prepared by adding 10 per cent of Acacia, and the two finished products compared. The results speak for themselves, the student has become prescription conscious and no argument is required to convince him of the advisability of such modifications. Scoville's "The Art of Compounding," is used for the didactic portion of the course, which is arranged to parallel the laboratory work. All of the practical work is done from a laboratory manual, which is graded at frequent intervals, and in its corrected form serves as a guide to the course in incompatibilities which follows the next year.

In the course designated as "Incompatibilities," the more serious types, and incidentally the least frequently occurring types, are taught theoretically and practically in the laboratory. These are of a type that can be handled by one of two methods, namely, drastic changes, or to quote an old preceptor, "throw up your hands and send out the mess." Both procedures have their supporters. I take a stand somewhat between the two extremes.

At this point, when the student hesitates to make a drastic change and, at the same time, is reluctant to dispense an unsightly, possibly inactive product, I digress to the subject of professional relationship with the physician. The time is opportune, since it seems the only way out and really constructive impressions can be formed.

The laboratory with this lecture course is perhaps a strange mixture. About one-half of the compounding is done from original narcotic prescriptions, taken from the files of many different stores. It need hardly be said that the pharmacist is required to keep these only two years, so that I have a plentiful supply of prescriptions from over 500 different physicians, and two years hardly makes the prescriptions obsolete. These are compounded, omitting the narcotic ingredient. I have not found that this, in even the slightest degree, encourages such omission in actual practice. Thus the student learns to read original prescriptions in various types of handwriting, becomes familiar with proprietary items, compares prevailing prices and, in my opinion, learns much that is lacking from routine laboratory courses or even hospital dispensing, where the variety is most often limited to the extreme.

The other half of the course consists of preparing the so-called hopeless types of incompatibilities, making the necessary changes, but always reserving the

students' personal opinions as to whether this should or should not be done. This sort of training is necessary since pharmacists may encounter such problems and be requested by the physician to correct the incompatibility. In addition some State Boards are giving such mixtures and expecting a product, showing the art of Pharmacy in all its glory.

Finally, let me state why I object to teaching "Incompatibilities" from a test-tube. Since we cannot show every type of incompatibility and, even if we could, no one could remember them all, why should we try? Since we are really trying to develop self-confidence, resourcefulness and logical reasoning, why should we waste valuable time to show reactions in a test-tube that the student may or may not associate with dispensing pharmacy? Would it not be better to show the most common types of prescriptions, reasons for the technic employed in properly compounding these and as many others as time will allow, filled from start to finish just as they would be in actual practice? After all the student, who must be guided in later years by reactions in a test-tube, has not been educated—he has been stuffed with facts. He cannot predict a reaction of a new mixture by pyramiding his fundamental sciences—he can only wish that it were like one he had seen in a test-tube back in his college days.

SOME FALLACIES OF QUANTITATIVE BIOLOGICAL TESTING.

BY H. H. RUSBY, M.D.

Students of our Pharmacopœia note that on page 126, under the heading Digitalis, the lethal frog dose of the ten per cent tincture is fixed at six thousandths of a cc. per Gm., while on page 359, that of the ten per cent tincture of Strophanthus is given as six hundred thousandths of a cc. It must be admitted that the toxic power of the Strophanthus tincture, thus indicated, is one hundred times as great as that of the Digitalis tincture. As neither of these tinctures is used in practice for the purpose of killing frogs, it must be assumed that the purpose of these frog standards is to indicate the "Therapeutic usefulness" of the respective drugs. One of them, the Digitalis, being one one-hundredth as active as the other, should be given in a dose one hundred times as great; that is, eight hundred minims or more than an ounce and a half, of the tincture. Or, if we assume that the designated dose of digitalis is correct, then, to preserve the pharmacological parity, the dose of Strophanthus tincture should be reduced to eight hundredths of a minim. Even if we decide on a fifty-fifty compromise, we should get four hundred minims, nearly 7 fluidrachms, for the digitalis, while the dose of strophanthus would be sixteen-hundredths of a minim. The doses actually stand at 15 minims and 8 minims, respectively. Are our practitioners of medicine this far off in their dosage, or is it true that the power of the drug to kill a frog has no quantitative relation with its usefulness as a human medicine? What is to be done about it?

We are told that both inefficiency and uncertainty in the action of strophanthus are due to the slowness of its absorption from the stomach, thus necessitating this large dose, as compared with digitalis, but I reply by referring to the fact that the tincture is directed to be made from the seeds of either *S. Kombé* or *S. hispidus*, or

any mixture of them, whereas only *S. Kombé* contains strophanthin, which is designated as obtained from that species. *S. hispidus* contains only pseudo-strophanthin.

Turning to digitalis itself, we find a general complaint of its inefficiency and variability in recent years; so much that its use has perceptibly declined, yet I am able to say that there has been no change in the general character of the drug in use from that of the previous decade. It seems clear that this result is due to reliance having been placed upon an untrustworthy test.

McDonald and Schlapp (*Quarterly Journal Pharmacy and Pharmacology*, for July to September) say that the effect of the digitalis on the brain so modifies its heart action that the cat (he prefers the Hatcher Method) should be subjected to a complicated series of surgical operations to eliminate this influence before the test is applied. But the patient is not placed under this condition when taking the medicine.

Messrs. Haag and Hawkins, in the December number of THIS JOURNAL, refers to the difficulty in the chemical assay of aconite tincture, and therefore approves of the substitution of the biological assay with guinea pigs. They admit, however, that a large number of animals is required for the test. Now comes Dyer, in the December number of the *Quarterly Journal of Pharmacy and Pharmacology*, and reports a very extended investigation with rats and mice, involving the use of more than 1000 animals, comparing the biological results with those of chemical assay of the ether-soluble alkaloid. He declares that the results are so closely similar as to be called "uncanny." It seems, then, that in this case both methods are accurate, if the operator is qualified, yet our Pharmacopœia has dropped the chemical assay, the appropriate method for the pharmacy laboratory, and has substituted the biological test, which no pharmacist will be in a position to use, even if competent to do so. What we are trying to do is to determine life-saving values by the use of an inconstant and variable unit of measure, and then guessing at the extent of our error. The effect is to prevent the pharmacist from making and testing his own tincture of aconite.

THE GROWING IMPORTANCE OF PROFESSIONAL PHARMACY.*

BY H. C. CHRISTENSEN, PRESIDENT, A. PH. A.

Retail pharmacy has awakened to the fact that the professional aspect is its best asset. During June and July of last year I attended pharmaceutical conventions in ten states and was pleased to find that the keynote of the presidents' addresses, as well as numbers of speeches and papers, placed emphasis on the professional side of pharmacy.

This reversion to type is not strange. What is strange is our temporary wandering away from the path we had trod for ages, and our emulation of certain cigar, sandwich and cut-rate emporiums that we thought had found the quick road to success. We envied them the volume of business they were doing without realizing the loss of prestige incurred. Absentee ownership, as usually practiced by these super-merchandising establishments, has not as yet been proven a success.

What awakened us to the realization of the advantages to be gained by more attention to the professional duties we had been neglecting? The steady loss of public respect and confidence no doubt played a part. Perhaps the joke page helped. Maybe when we read about the person

* Delivered at the Joint Meeting of the Minnesota Pharmaceutical Association and the Northwestern Branch A. PH. A., February 19, 1931, St. Paul, Minnesota.

who had looked all over for a place to buy medicine without finding it, we decided to specialize for him. Or, perhaps, the fact that here and there the outstanding successes of certain individual pharmacists were plainly attributable to the superior service to the public, played a part.

One of the secrets for the success of the individually-owned pharmacy lies in doing for the community those things that the highly commercialized non-resident owned institutions cannot do. Some of these are rather intangible and more or less psychological—an expression of the personality of the owner.

Although I make no pretense of qualifying as an expert on the cure of the ills of retail pharmacy, I have developed some very decided views as the result of 25 years in the retail business for myself, and later in association work, which has given me the opportunity to study and observe. I have no hesitancy in saying that the mistake a large majority of individual pharmacists made was copying the methods pursued by the chain stores at the time these establishments came into vogue, when they should have adopted just the opposite tactics and made their stores expressive of professional pharmacy. As one business expert said, "The successes are not the imitators, but the ones who do things differently, within common sense routes. Basically, the problem is your own store, your own public, your own ability."

I realize that the opportunity for the exclusive prescription pharmacy is limited chiefly to large centers, and that a great majority of the average retail pharmacists must and will continue to merchandise. I do not object to this, but there are limitations as to the types of merchandise that are appropriate. Pharmacy from its very beginning in this country has been dual—the professional coupled with merchandising. But the dignity of the profession should be protected.

Now more particularly with regard to the arrangement and appearance of the retail pharmacy: It goes without saying that stores should be scrupulously clean, sanitary in every respect, and so arranged as to retain a professional appearance. A section or two of the old style shelf bottles containing tinctures, spirits, etc., are well worthy of being put in plain sight for their advertising value. The prescription department should not only be made attractive by a goodly supply of drugs, chemicals, utensils and refrigerator, but in a majority of cases, I believe it an advantage to locate the prescription counter where it can be seen by customers instead of hiding it in the back part of the store. However, whether this is done or not, a well-arranged prescription department, which might also include a chemical laboratory, is a big asset not only with the public, but also with the physicians in your locality. Prescription business is not attracted to the chain drug stores, or for that matter, to any excessively commercialized store. This can only be done by giving your store a professional appearance and gaining the confidence of the community, which incidentally also helps your other lines.

Instead of filling your windows with patent medicines marked at cut-rate prices, pasteboard cartons, and advertising matter from manufacturers, remember that your window display space is one of the best assets of your business, if properly used. Your displays should emphasize the pharmaceutical aspect of your store—crude drugs, utensils, illustration of processes, finished products, first aid equipment, etc., etc., are good examples. If your window is just a copy of hundreds of others, it will attract no attention and the display space is wasted. Select the things that interest you, and you will find the passerby interested as a rule. Don't hide your light under a bushel. Your pharmacy will be remembered the next time there is a prescription to be filled if you have properly advertised the fact that you specialize in this work by window displays emphasizing professional pharmacy.

Several years ago, I made the remark that one of the biggest little mistakes pharmacists had made was to take the characteristic show globes out of their windows. I found myself quoted in a number of state association presidential addresses, then in the magazines, and by now practically everyone in pharmacy has been quoted as approving show globes. I understand that the entire supply in the country is exhausted, and one manufacturer has started making them again. This is a good illustration of the awakening to the growing importance of professional pharmacy. In fact, it has gone so far that even the joke pages have turned professional. One newspaper recently printed a story about a man who was late and gave as his excuse that he was waiting for an hour for the red light at a certain corner to change to green before he discovered it was a pharmacy show globe. So you see our own attitude is important, as we have swung the public attention from sandwich-making to show globes.

Cut-rating is governed largely by location and circumstances. Personally, if I were in business opposite a chain store, I would keep accurate account of their advertised prices. I would not display the products on which they are cutting. When called for, I would sell these preparations at the same price the chain advertises. Apologies for a higher price do not interest the customer. When the products are identical, price governs the sale. I would, however, cultivate the acquaintance of my customers and try to gain their confidence. Every time I sold them an advertised article at a cut rate, I would hand out a free sample of a preparation of my own or a U. S. P. or N. F. product, with the comment that I should like to have them try this. I have known several individual pharmacists who have built up an ever increasing business in this way, in some cases, even by parcel post among families who have moved away. Your cost is lower, and the customer does not pay distribution and national advertising campaign costs, and if you put out a good product, you are bound to build up a repeat business. Remember, you have no competition or cut rates to contend with on this business.

The trend toward the professional has, of course, come about largely through the adoption of higher educational requirements and more thorough training demanded of those entering pharmacy. In 1914, only two states required any college of pharmacy training. Not a single state required high school. Now thirty-seven states have college of pharmacy prerequisite requirements, and every state but one requires high school.

The four-year college course in pharmacy becomes effective for matriculation next year—1932. This gives opportunity not only for more thorough training in the professional side of pharmacy but also in the fundamentals of business. Recognizing, as we must, the dual nature of retail pharmacy, such training is needed.

With the improved conditions in pharmacy, we are regaining the confidence of the physicians in our professional ability and also his appreciation for special services along various lines. The pharmacist well grounded in materia medica will often find opportunity to talk to the physician concerning action, uses, incompatibilities, doses, etc., not only of the newer drugs and preparations but often the older ones. The medical colleges are admitting that they have been somewhat weak in their materia medica courses. A frank and friendly relationship between the physician and the pharmacist will not only prove beneficial to both but will be of great value to the public which they serve.

In several of our larger cities, joint committees of pharmacists and physicians are doing some splendid work by encouraging the use of official products—U. S. P., N. F. and New and Nonofficial Remedies—in preference to trade-marked products, the object being to cut the cost of medical care and minimize harmful self-medication. Physicians realize that by writing prescriptions for proprietaries, they have encouraged the use of patents and proprietaries, which often leads the manufacturer, later, to advertise directly to the public, and thereby encourage dangerous self-medication. The Chicago Medical Society and the Chicago Retail Druggists' Association have a joint committee which is doing a great deal of good in bringing about a better understanding between pharmacists and physicians. The findings are published in the journals of these associations.

This reminds me of the important obligations pharmacists owe to their associations—local, state and national, the latter including the AMERICAN PHARMACEUTICAL ASSOCIATION and the National Association of Retail Druggists. These things that you cannot accomplish by yourself, they are accomplishing by group action. If you cannot afford the time to take an active part, you should be glad to lend your support by swelling the membership and paying dues to these bodies; in fact, you should be apologetic that you are not doing more. What would you think of a physician who does not hold membership in the American Medical Association and the state and local medical societies? The same applies to the pharmacist who does not belong to the AMERICAN PHARMACEUTICAL ASSOCIATION and the local branch. Such membership gives you professional prestige, just as membership in a good club gives you social standing. The future holds bright prospects for pharmacy, if we take advantage of the opportunities before us. Joining the associations is one important step.

LABORATORY GROWN ERGOT.

The following report on "Laboratory Grown Ergot" is taken from *Science* of February 13th.

"Ergot, one of the most important drugs used by physicians, may in future be raised artificially in the laboratories of pharmaceutical factories, instead of being harvested in the natural state as at present. Preliminary experiments pointing to this possibility have been carried out by Miss Adelia McCrea in the botanical laboratories of the University of Michigan."

"Miss McCrea grew cultures of the fungus from which the drug is derived on a variety of media, including mashes and jellies made from various kinds of grain, and simpler jellies containing different sugars. She found malt sugar to be the best food for the fungus. To get ergot to grow in a flask or test-tube at all is regarded as a considerable triumph, because under natural conditions it is a parasite, preying only on living plants. She found it to be fairly modest in its food requirements, doing quite as well on a two or three per cent concentration of malt sugar as it did on six or eight per cent, and failing to thrive at all at higher concentrations.

"It was greedy for oxygen, however, growing much faster when a stream of pure oxygen was passed through its tube than when it was given only air. But on a mixture of half oxygen and half carbon dioxide its growth was considerably retarded. It grew best at temperatures between 68 and 77 degrees Fahrenheit. Light had a powerful effect on it. Without the shorter-wave visible rays—the blue end of the spectrum—it did not develop the purple color that is its most marked characteristic. Ultra-violet light, however, had no stimulating effect, and in repeated doses even retarded development.

"Miss McCrea made physiological tests of the ergot growths she raised, and found that they produce most of the effects characteristic of natural ergot, though somewhat less powerfully. The reactions averaged from 40 to 75 per cent of those obtained with the same concentrations of natural ergot. In making these tests, however, she had to use the whole vegetative growth of her cultures, for they did not produce the full-grown fruiting bodies which are the only source of commercial ergot at present.

"Miss McCrea also made two attempts to infect growing grain with ergot, with the idea that its field cultivation might be undertaken. At present, commercial ergot is obtained solely by hand-gathering of wild growths on grain, especially rye, and wild grasses. Because of the great amount of hand work involved and the high cost of labor in this country, American production of ergot is unprofitable. However, the field experiments did not yield particularly encouraging results, and Miss McCrea concludes that if it ever becomes desirable or necessary to raise ergot in this country the laboratory method is the more promising. A full technical account of Miss McCrea's work is contained in the current issue of *The American Journal of Botany*."

Acidity of Parchment Paper.—Some parchment paper when moistened may show a distinct acid reaction. Such paper is not suitable for wrapping powders containing deliquescent salts; waxed paper is preferable for this purpose.

BALTIMORE RETAIL DRUGGISTS' ASSOCIATION ANNUAL BANQUET.

The Baltimore Retail Druggists' Association held its annual banquet, March 12th, at Hotel Rennert. President Samuel Y. Harris presided as toastmaster. Among the invited guests were President H. C. Christensen of the A. PH. A., Mayor Broening, Dr. R. H. Riley, of State Health Department; Dr. C. Hamson Jones, of Baltimore Health Department. The banquet and entertainments were much enjoyed. A number of Washington pharmacists were in attendance.

A presentation was made to President Harris as an expression of esteem of the membership and for his services; Governor Ritchie was honored in a resolution of appreciation and high regard.

The greatest measure of success is possible when all divisions of pharmacy and the drug-trade activities coöperate.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

Article III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meeting of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter.

BALTIMORE.

The February meeting of the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Emerson Hotel on Tuesday, the 24th. President Frank L. Black presided.

Eugene C. Brokmeyer, of Washington, Attorney for the National Association of Retail Druggists, was the speaker and had for his subject: "The Present Status of the Capper-Kelly Bill."

Mr. Brokmeyer presented his subject in a forceful and comprehensive manner. He traced the history of the Capper-Kelly Bill from its first presentation before Congress to its present status. He pointed out the unfair competition existing in the present chain store and agency methods of distribution, the false and misleading nature of the so-called "price cutting sales," and emphasized the seriousness of such monopolistic practices for the independent retailer. Mr. Brokmeyer urged closer coöperation, better development of organization and, as most important, education of the public to a realization of the abuse they receive by such a system. In concluding he stated that the Capper-Kelly Bill, while not a panacea, is the closest solution of the problem that Congress has yet received. The aims and objects of the Capper-Kelly Bill were further discussed by H. H. Robinson, who recommended that a determined effort be made to present the real merits of the Bill to the public before Congress convenes in December. The subject was further discussed by W. J. Lowry, Miss Cole and others.

Reports were then received from the Secretary-Treasurer, and from the various chairmen, and standing committees.

The following officers were elected and installed for the ensuing year:

President, Aquilla Jackson, 402 Roland Ave., Baltimore, Md.

Vice-President, Andrew F. Ludwig, Baltimore, Md.

Secretary-Treasurer, Wm. F. Reindollar, 2411 N. Charles St., Baltimore, Md.

At the suggestion of Dr. R. L. Swain, a vote of thanks was accorded to Miss B. Olive Cole, the retiring *Secretary-Treasurer*, whose able and efficient services, extending over the past decade, have been a vital factor in the welfare of the Branch.

President Jackson appointed the following committees:

Committee on Membership: *Chairman*, B. O. Cole, School of Pharmacy, University of Maryland; N. M. Chandler, 26 E. Mt. Vernon Place; Frank Black, Charles and Chase Sts.; Sam Harris, Lombard and Poppleton Sts.; Louis Schulze, 2245 Eastern Ave.

Committee on Professional Relations: *Chairman*, E. G. Eberle, 10 W. Chase St.; Dr. J. Carlton Wolf, 401 S. Broadway; Lawrence Williams, 1300 N. Caroline St.

Committee on Science and Practice of Pharmacy: *Chairman*, Dr. Glenn L. Jenkins, School of Pharmacy, University of Maryland; Dr. John C. Krantz, Jr., 2411 N. Charles St.; Dr. Fitzgerald Dunning, Charles and Chase Sts.

Committee on Education and Legislation: *Chairman*, Dr. A. G. DuMez, School of Pharmacy, University of Maryland; Dr. R. L. Swain, 2411 N. Charles St.; R. E. L. Williamson, Candler Building.

WM. F. REINDOLLAR, *Secretary-Treasurer.*

CHICAGO.

The 195th meeting of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, held on the evening of February 17th, started with a dinner for Dean H. V. Arny, the speaker of the evening; about 45 were in attendance. Following the dinner they met with 100 others at the University of Illinois School of Pharmacy to hear Dr. Arny speak on "Organizing Prescription Pharmacists."

President Hynes dispensed with the reading of the minutes and introduced Mr. H. M. Emig, who gave a summary of the contents of both the November and December issues of the JOURNAL.

Dean Day was then called upon to introduce the speaker of the evening; he said in part:

"Dean Arny was born in Philadelphia, but was reared in New Orleans where his family moved during his early years. Here he entered the employ of a well and favorably known pharmacist, F. C. Godbold, who, later, was an honorary president of the AMERICAN PHARMACEUTICAL ASSOCIATION. He returned to Philadelphia to receive his pharmaceutical education and then went back to New Orleans. Later, he became secretary of his state association. Then he went to Germany where he studied for four years and received his Ph.D. degree; returning, he was elected dean and professor of Pharmacy at Western Reserve University in Cleveland. From there he went to New York, as professor of chemistry and associate dean of the College of Pharmacy of Columbia University. On the retirement of Dean Rusby, Dr. Arny was offered the deanship, which position he now occupies. He has interested himself in all pharmaceutical organizations and has been honored by holding the highest offices in many of them—president of the AMERICAN PHARMACEUTICAL ASSOCIATION, member of the American Association of Colleges of Pharmacy, member of the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION, member of the Board of Pharmacy of New York State. He has also been editor of *The Druggists Circular*. Dr. Arny has written many pharmaceutical papers on every phase of pharmacy; he has been member of two U. S. P. Revision Committees, of the N. F. Revision Committee and chairman of the Committee on Pharmaceutical Research, and chairman of the National Conference on Pharmaceutical Research."

Dean Arny started his talk by complimenting Dean Day for his ability to get appropriations, and he stated that this year sees the University of Illinois School of Pharmacy with an enrollment greater than that of Columbia College of Pharmacy.

"Everybody in the drug world is more or less pessimistic at the present time. This is all right if it is not so deep as to be despair, for Pharmacy as an art is one of the most important callings.

"Without the sick person there is no reason for the existence of the pharmacist. What does the sick person do to try and get well? The chart shows that most of the sick end at the druggist. (See below.)

"It is not surprising that Pharmacy is being commercialized, for look at the changes in medicine to faith cures, etc. So is the field of the druggist to real medicine changing. But, how far will it go? The druggist has fallen into the line of least resistance and what effect will it have? By it, the general public has discovered that Pharmacy is selling its birthright to commercialism in order to keep up with the overhead. Organizations have tried to have laws passed limiting the sales of patent medicines to the registered pharmacists, but some states have ruled against this, claiming that it does take pharmaceutical knowledge to make the preparations, but not to sell them. Several important men in the pharmaceutical field have predicted that there will be an increase in the number of ethical drug stores, the operators of which will have to be highly specialized for the new things which are being discovered daily. Then we shall have the

Sick Person.						
Self medication.		Medical attention.			Hospital patients.	Cults and isms.
Pat. Med's.	Domes. Rem's.	Surgeons and other specialists.	Regular. ℞ writers.	Practititioners. Dispensers.	Homeopaths. Dispensers.		
Druggist.		?	Druggist.	Manufacturers.	Manufacturers.	?	?

commercial type of store—run by salesmen who depend upon speed, pep and a smile to bring their business.

"The retail man is not the only one worrying about the future. Look at the position that the wholesaler is in! Look at the changes in the manufacture of preparations! In 1880 most of the manufacturing was done in the back room of the drug store. Some manufacturers were in business, but only a few of them. From 1880 to 1890 came a change with the arrival of fluidextracts and the introduction of tablets to take the place of hand-made pills. The latter was particularly objected to by the retailer. From 1900 to 1910 things were again changed, partially by the introduction of the Pure Food and Drugs Act. Previously the selling point of the manufacturers was that their preparations were assayed—others were not, therefore, theirs were better. Then assay standards were set by law and made compulsory, so that all manufacturers were on the same basis. Thus their old argument for their products was destroyed. Bio-assays were introduced at this time. From 1910 to 1915 the large manufacturers started putting their specialties on the market, rather than making only U. S. P. and N. F. preparations. Now the Association of Manufacturers has a great job on its hands—how to advertise to dispensing physicians and the medical profession in general and still secure lay sales and at the same time remain ethical. What is to be the fate of the U. S. P.? Each revision is an improvement on the preceding; the pharmacist is better trained, yet the physician uses more and more specialties. What is the remedy?

"From a study of the prescription business, it has been found that not one out of fifty existing drug stores could exist on that alone. There is no objection to the sale of good patents or toilet goods. The drug store is the proper place for them to be sold. Research by McQuade and Parke, Davis Co. shows very similar figures in the percentages yielded by the different departments of the stores; the N. W. D. A. did some work along the same line, but its work was confined to the city stores.

Drug Business Statistics.

Total.	P. D. 11/4 billion dollars.	McQuade 2 billion dollars.	N. W. D. A.
Drugs, chemicals and prescriptions	10%	14%	33%
Toilet goods	10%	15%	15%
Patent medicines	22%	28%	28%

"In 1914 the American Institute of Prescriptionists was formed, but it has been dormant, because, though it is ingenious, it is not practical. The standard set for membership was: The member must be a registered pharmacist, a graduate, a majority owner of the store holding membership, and the store must show that 90% of its business is done in the prescription department. The store must have a good location and the pharmacist must be capable of carrying on U. S. P. tests and analyses. The term was three years in length and renewable at the end of that time if the pharmacist could prove that the conditions were the same as when admitted.

"The A. I. P. should start with 1000 members. Who will constitute it? Not men who can be pointed out as having done magnificent work in the prescription field, for these will object to others who have not been so successful being classed with them. It will be composed of young men who wish to build up a prescription business, rather than one based on commercialism. The American Institute of Surgeons is of like character as is the American Institute of Engineers, the American Chemical Society and the Guild of Opticians. How can it be organized? From $25,000 to $100,000 will be necessary, and a young ambitious man will be on full time to run it. What will it do for the members?—Advertise them as men to whom prescriptions may be trusted. The basic object is to let the physician know that the members wish to fill prescriptions. Will this work? Perhaps not, for one member would not trust others to fill prescriptions even though they all belonged to the organization. Booklets should be sent to physicians, telling them of the members, standards, etc. Acquaint the medical profession with the many preparations which should be freshly made and assure them that these would be properly taken care of. This would help keep prescriptions away from the secrets and open to U. S. P. and N. F. remedies. Also remind the doctors that fresh powdered drugs put into capsules often get proper results. Suitable charges could be made for such service so that the pharmacist could get his just dues for his professional knowledge. If this organization is run on an honest basis the physician would respond enthusiastically, for he prefers freshly prepared medicaments to machine made.

"Another suggestion has been this—Certified Pharmacies, endorsed by medical associations, for in 1914 if the physician did not give his personal endorsement to two or three stores, the patient was liable to get unpleasant results from the medicine taken."

Dean Arny then pointed out that personality is the basis for the whole thing, citing instances of successful stores owned by either physicians or pharmacists, which finally failed because the owner had other interests, and those in whose management the stores were put did not have the personality back of them to keep up the good quality of the stores.

Quite a bit of interest was taken in the discussion following the talk, Wm. Gray, G. L. Webster, S. Shkolnik and several others participating in it. Professor Gathercoal pointed out that a man who has been in a city of about 95,000 has developed a prescription business of such value that last year he filled 50,000—and he developed this in only eight years. The other druggists in the same city did as much prescription business last year as they had done previously, showing that this live wire had simply stimulated the physicians to write more prescriptions.

Following the discussion, a rising vote of thanks was given Dean Arny, and the meeting adjourned.

LEWIS F. MARTIN, *Secretary.*

DETROIT.

Following a chicken dinner, which was served at 6:45 P.M., February 17th, President John E. Webster called the business meeting of the Detroit Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION to order at 7:40 P.M. The minutes of the meeting of January 15th were read and approved.

The Membership Committee report was given by Mr. Joseph J. Burniac, who turned in eight applications for membership. The latter also reported that he had sent a letter to Secretary E. F. Kelly asking his opinion of the emblem idea as submitted at the last meeting and that he had approved the idea. Mr. Burniac also reported that he is working out a proposed A. PH. A. label and that he will have a sample of this for the next meeting.

The President then called upon James E. Early, Chief Pharmacist at the Receiving Hospital, as the speaker of the evening, who spoke on the subject "Hospital Pharmacy." In his opening remarks Mr. Early mentioned that Receiving Hospital originally had been planned ten years ago to take care of 160 patients, but that it has now grown to accommodate 800 patients.

In 1930, the speaker said, the Emergency Department at the Receiving Hospital had accommodated 40,000 patients, while the Out-Patient Department had served more than 160,000. He explained that this number was accounted for by the fact that patients are served on an average of 4.1 times. The Out-Patient Department is operated mostly by staff physicians from the Detroit College of Medicine.

"The Pharmacy Department," Mr. Early said, "is not called upon to render a large volume of service to the General Surgery, Orthopedic and G. U. Departments, but the greater amount of service is rendered to the Department of Gynecology."

In mentioning skin diseases, the speaker said there were two classes of patients coming to the Receiving Hospital, those who have scabies and those who are going to have and, in reference to this, he mentioned two embryo physicians who were asked what they intended to specialize in when they began practice. One said he would specialize in skin diseases, because the skin never gets better and the patient never dies. The other young man said he would also specialize on the skin and everything inside of it.

In his 15 years of experience in Hospital Pharmacy, Mr. Early said, that little pharmacy service was required for psychopathic cases and that these requirements were mostly special formula sedatives. He explained that at the Receiving Hospital Pharmacy they do not purchase liquid sedatives or cough mixtures and that they endeavor to keep away from proprietaries by the use of standardized formulas. While in reference to the quantity of Spiritus Frumenti used in the Hospital and in what quantities it is used for the prevention of delirium tremens in alcoholic cases he told of the Irishman who was brought to the Hospital after having fallen three flights from a building and being badly shaken up, but not otherwise injured, was given two drachms of "Spiritus Fermenti," who, when he had "tossed it off" said, "Begorra, how far would a man have to fall to get a drink?"

"The purchasing of supplies for the Pharmacy Department," Mr. Early said, "is a big problem and one in which the Purchasing Department is unable to understand why it is not possible to do all purchasing required, by placing orders twice a month." He pointed

out that buying is done by bids and that by the time the bids are in and accepted it takes from three weeks to five weeks to get supplies, which fact, of necessity, must be offset by quantity buying and that no one can foresee conditions accurately enough to place orders for delivery so far ahead without running short of some items, unless the orders are placed in quantities entirely out of proportion to the needs. Hence, frequently, it becomes necessary to place orders more often than twice a month.

The cost of treatment of patients at Receiving Hospital is borne by the taxpayer unless the patient is found to be able to pay. All persons coming to the Hospital are treated first and then, if able to pay, are charged the standard fee of $5.00.

In the practice of Hospital Pharmacy the pharmacist must be prepared to handle X-ray, laboratory and other work in addition to his own profession, but the speaker said this is offset by the more congenial hours than those served by the pharmacist in the store.

The speaker was thanked by President Webster and following his splendid talk, Mr. Early answered a number of questions from those present. One question propounded was as to whether it was true that the Out-Patient Department was filling several thousand prescriptions a day. Mr. Early explained that it was not the Out-Patient Department at the Receiving Hospital, but the City Physicians Department and that he understood there were from 1200 to 1400 prescriptions filled per day at this department, and that these were mostly proprietary.

Prof. C. C. Glover, of the University of Michigan, College of Pharmacy, when called upon for a comment, suggested that the facts brought out at the meeting seemed to indicate a development toward state medicine and pharmacy; "a development," he said, "which seems to be coming rapidly along with standardization of costs in medical care."

There was no further business to be transacted and upon motion of Leo J. LaCroix and Professor Glover a vote of thanks was tendered Mr. Early for the splendid talk and the discussion which followed.

BERNARD A. BIALK, *Secretary.*

NEW YORK.

The February meeting of the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the College of Pharmacy, Columbia University, on Monday, the 9th, the chair being taken by President Robert P. Fischelis. About 100 members were present in spite of the inclement weather.

The minutes of the January meeting were read and approved.

The President submitted the following recommendations and resolutions:

"While it has not been customary for the new presiding officer of this Branch to present any formal communications to the members upon assuming office, it appears to me, after having read the Constitution and By-Laws of this Branch, that it would be helpful if you would concur in a number of recommendations which I would like to make to assist us in conducting our meetings during the ensuing year.

"I find among the list of committees, that no provision has been made for a Committee on Resolutions. Quite frequently, the papers presented at our meetings, and the discussions resulting therefrom, have led to the offering or suggestions for action of one kind or another. We must remember that we are a Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, and that Article 3 of Chapter VII of the By-Laws of the parent body provide that 'The acts of local Branches shall in no way commit or bind this ASSOCIATION, and can only serve as recommendations to it.' For this reason, any resolution passed by this Branch, or any action taken by the Branch, should receive the most careful consideration. It appears to me that unless a matter is of immediate local importance, it is unnecessary to hastily pass a resolution bearing upon it at the same meeting at which the matter is first brought up for discussion. I would, therefore, recommend that the Chair be authorized to appoint a committee of three, to be known as the Committee on Resolutions, and that all resolutions presented to the Branch, or suggestions for definite action by the Branch, be referred to the Committee on Resolutions for consideration before they are acted upon by the Branch.

"I have in mind that a resolution presented at one meeting of the Branch would be referred to the Committee and that their report, which would, of course, give the resolution as recommended by them, be made a part of the notice of the next meeting so that each member of the Branch would have an opportunity to read what is to be acted upon. Action would be taken at the meeting following the presentation of the resolution unless the Branch decrees

otherwise. If a matter of immediate local importance should arise and it is deemed necessary to have action by the Branch at the same meeting, the Resolutions Committee could retire and bring in its report later in the course of the same meeting. Such occasions will be rare, and it will be up to the Branch to decide when there is need for immediate action at the same meeting. It seems to me that a procedure of this kind is calculated to be fair and in the interests of avoiding snap judgment or precipitous action.

"A second recommendation I should like to make is that the Committee on Progress of Pharmacy present to us, through one of its members or the Chairman, at each meeting, a brief summary of pharmaceutical events, as portrayed in the pharmaceutical press during the preceding month. This summary should not include matters of education and legislation, which will be handled by the committee having such matters in charge, but it should give us briefly the trend of progress in professional and commercial Pharmacy. It is possible that the Committee may be able to interest advanced students at the various Schools of Pharmacy in compiling such summaries, and if so, I believe that this would be an excellent method of encouraging surveys of pharmaceutical literature on the part of these students. It would also lighten the work of the Committee, as its function would then be one of 'boiling down' the material prepared and editing the content of such a survey.

"A third and final recommendation which I should like to make is that in discussions upon papers, each person entering the discussion should limit his remarks to five minutes, that no person should speak a second time until all others who desire to be heard on the subject have had an opportunity to speak. Persons especially invited to discuss a paper would, of course, not be limited to the five-minute period, and if at any time the Branch desired to extend the time of any person entering the discussion, this could be done by the consent of the meeting.

"These recommendations are submitted in the interests of an orderly procedure at these meetings, and to furnish a guide for the presiding officer in the fair and equitable distribution of the time available for the presentation and discussion of matters of vital interest. I ask your approval of these recommendations as submitted.

"Respectfully submitted,
"ROBERT P. FISCHELIS, *President.*"

Dr. Rusby moved that these be referred to a Committee of Three to bring in a report at the next meeting.

The President, Dr. Schaefer and Mr. Currens discussed the recommendations; Dr. Newcomb seconded Dr. Rusby's motion and this was carried.

Treasurer Turner F. Currens reported a balance on hand of $552.07, and requested that the books be audited. He asked the President what district was covered by the jurisdiction of the New York Branch and was informed that, according to the By-Laws, the district covered included the states of New York, New Jersey and Connecticut; he requested that the Secretary send this information to Secretary E. F. Kelly.

A motion was made to receive the Treasurer's report and to ask the Auditing Committee to audit the books.

Mr. Lehman, chairman of the Committee on Education and Legislation, reported on the bills as follows:

1. Federal Bill. The Capper-Kelly Bill passed the House of Representatives, but with several amendments; not passed by Senate but will probably be held over till next session.

2. State Bills.

   (*a*) Judge Larkin, of the Supreme Court of the State, at Buffalo, in the Pratter Case, decided that the Pharmacy Ownership Law is unconstitutional; any person may own and operate a pharmacy or drug store, provided that it is in charge of a registered pharmacist or licensed druggist; the Attorney General for the State of New York will appeal.

   (*b*) Senator Love's Bill forbids the sale of food to be eaten on the premises, in pharmacies or drug stores; penalty loss of license, fines not to exceed $500.00 or imprisonment for violations; condemned as too severe; probably unconstitutional.

   (*c*) Hastings Bill to allow the State to formulate regulations for the sale and dispensing of medicinal liquor by physicians, and to permit physicians to prescribe and dispense without limit; disapproved on account of conflicting with the federal law.

(*d*) Bill to prevent the sale of all medicines, official or proprietary, which contain poisonous, habit-forming, deleterious or potent drugs, except in stores or institutions registered by the Board of Pharmacy; approved.

(*e*) Bill to prevent the sale of medicines containing proscribed drugs for resale, to such persons or firms who are not licensed to sell them. Approved.

(*f*) Bill exempting female registered pharmacists from the restrictions of the Labor Laws; no action.

(*g*) Bill forbidding the sale of bichloride of mercury; action to depend upon those who are affected, as such regulation is already in effect in New York City.

(*h*) Bill requiring the marking of the quantity of content of barbituric acid and its compounds, same as required for opium, chloral hydrate, etc.; approved.

Mr. Groisser, in commenting upon Senator Love's Bill, thought that the idea of eradicating the soda fountain and luncheonette from pharmacies was an excellent one; he said that the main support of the chain stores was the luncheonette counter, and in the interests of the profession of pharmacy he was willing to sacrifice the fountain from his store as he considered it the greatest evil of the drug store of to-day. He felt that the State Association could work out a suitable bill with Senator Love.

Mr. Lehman held that it was just as unsanitary to have a luncheonette in a 5 and 10 Cent Store as it was in a Pharmacy, and said that if it was in the interests of the public health to exclude luncheonettes from pharmacies, they should also be excluded from 5 and 10 Cent Stores and all stores that handle food on the luncheonette principle.

Dean Dandreau, for the Membership Committee, reported progress.

The Secretary reported that he had received applications for full membership in the Branch from Messrs. George R. Christ, Alfred B. Robertiello, Julius A. W. Luck and Louis Schneider. These were approved.

Dr. Schaefer, chairman of the Committee of Three, appointed at the January meeting to consider the advisability of the Branch joining the N. Y. Pharmaceutical Conference, said that as yet he had no report to submit.

Under the heading of New Business, Dr. Schaefer reported that he had received information from the railroad company offering reduced rates of transportation to persons attending the A. PH. A. Convention at Miami, and that he would forward this information to the chairman of the Committee on Transportation of the A. PH. A.

Chairman Lewis N. Brown, of the Committee on the Progress of Pharmacy, read abstracts from the current literature on the Cultivation of Camphor in Florida, the Introduction of a Practical Examination for the Licensing of Pharmacists by the Kansas Board of Pharmacy, the Limitations of Phenol-Coefficients of Coal Tar Disinfectants and the Emulsification of Liquid Paraffin Preparations; he quoted from a paper on Aspirin poisoning, saying that Hungarian statistics covering 752 cases showed only 4 deaths, the average poisonous dose taken being from 300 to 450 grains; the minimum lethal dose is between 450 and 600 grains; the reason for the low mortality is the insolubility of aspirin, and the fact that large doses produce vomiting. He referred to a newspaper editorial commenting upon the world's supply of heroin; in spite of the fact that only 1738 lbs. are needed per year for legitimate medical use, in 1929 not less than 30,000 lbs. were manufactured.

The President then called upon Prof. H. H. Rusby, M.D., D.Sc., to read his paper on "Some Questions of Pharmacopœial Interpretation," which is here quoted in full. (A paper by Dr. H. H. Rusby, submitted prior to the meeting, was submitted to the JOURNAL, and is printed elsewhere.)

SOME QUESTIONS OF PHARMACOPŒIAL INTERPRETATION.

"1. Questions of interpretation of the language of the Pharmacopœia should be decided in the light of the objects and purposes of that instrument, most important of which is the securing of efficiency and uniformity in drugs and medicinal preparations.

"The importance of securing the official acceptance of a correct interpretation of the U. S. P. provisions can hardly be overestimated. If a fair interpretation provides for or even permits the use of adulterated drugs for the production of adulterated medicinal preparations, the Committee that supplied such language faces a grave responsibility for having failed to perform the office for which it was appointed. If, on the other hand, such a charge cannot be maintained, the language of the Pharmacopœia being such as to insure

the accomplishment of the intended purpose, then excuses or palliation of a failure to conform to that language should cease. Court questions of this kind usually go before judges and juries who are not versed in the technicality of the subject and who, therefore, may easily be misled into the rendering of wrong decisions. This makes it imperative that such bodies as our own, which are supposed to possess full knowledge of the subjects involved, should investigate and determine such questions, and should so place our decisions on record that they can serve for reference by those who are less qualified.

"For these reasons, I have stated my propositions in the form of numbered resolutions, and I shall call upon this meeting to express its opinions as to the correctness of the interpretations which I here submit.

"2. The official requirements for drugs and medicines relate to the articles themselves, and are uniformly applicable thereto, regardless of who is concerned in their production or distribution.

"In order to make clear the importance of a correct decision on this point, I must state that the Chief of the Food and Insecticide Division of the U. S. Department of Agriculture has claimed and has debated the subject at length, that he has authority to exempt from the observance of the U. S. P. requirements those manufacturers whom he characterizes as 'reputable.' No explanation is given of the standards by which he would designate those who are reputable, nor what method he would employ to formulate a list of those who are disreputable. In this connection, it must be remembered that the Pharmacopœia has been prepared and formulated on the assumption that any pharmacist is authorized to obtain the crude drugs and to make his own preparations in small lots. It is obvious, therefore, that if the Food and Insecticide Division is to exercise such a selective method of administration of official requirements, it would be necessary for that Division to be acquainted with every retail pharmacist in the United States, as to whether he is reputable or disreputable.

"3. 'In the manufacture of products and preparations on a large scale, deviation in detail from the official processes is permissible, provided the finished products conform to the definitions, descriptions, tests and standards prescribed by the U. S. Pharmacopœia, Tenth.' (U. S. P., General Notices, page 1, fifth paragraph.)

"Two questions have been raised regarding the interpretation of this provision.

"First, do 'processes of manufacture' begin with the selection and purchase of the crude drug, or only after that drug has been introduced to the laboratory and manufacturing operations on it have been begun?

"Second, if the former is true, can the choice of an adulterated drug for such purposes be classed as a 'deviation in detail?'

"My answer to both of these questions is based on my knowledge of the history of the adoption of this paragraph, and the reasons for which it was adopted. When the question arose, in the laboratory of Parke, Davis and Company where I was employed, as to whether large manufacturers should be compelled to manufacture in the small lots prescribed by the official formulas, and, if not, whether they were justified in using apparatus that was more economical in large operations, and to vary the methods to suit convenience under such circumstances, Professor Remington was appealed to clarify this situation by the introduction of an appropriate provision in the Pharmacopœia and this paragraph was the result.

"I greatly doubt whether any well-informed and disinterested critic will claim that the selection of a crude drug constitutes a part of the manufacturing process, in the sense intended by this provision.

"Should a different view prevail, I am still sure that it would not be held that the selection of an adulterated drug for the making of an official preparation could be regarded as a 'deviation in detail,' but as a serious alternative, to be adopted only for some very cogent reason. I therefore submit the following conclusions.

"4. The term 'official processes in manufacturing' cannot be construed as applying to the selection of the drug before any manufacturing process has been begun.

"5. The term 'deviation in detail' cannot be construed to include the use of a drug that does not meet the specified requirements for that drug.

"6. 'The official definitions and standards for vegetable drugs apply to all forms in which they may enter commerce, whether whole, cut, ground, powdered, or otherwise prepared for use, unless specifically exempted in the monograph or admitted under authority for manufacturing or for a special purpose.' (U. S. P., General Notices, page 4, first paragraph, under 'Vegetable Drugs.')

"The importance of securing an authoritative interpretation of this paragraph is found in the fact that it has been claimed that the phrase 'specifically exempted by authority for manufacturing' empowers the administrative officers of the Food and Drugs Act to authorize the use, for this stated purpose, of drugs that do not meet the requirements of the U. S. P. as to quality and standard. When this claim was questioned, the authority given for it was the Chairman of the Revision Committee of the Pharmacopœia and, so far as I know, this reference has never been denied or questioned. It is impossible to understand how anyone familiar with the elements of the English grammar can find any reference in this exemption to quality or standard. The statement expressly says 'the forms in which they enter commerce.'

"It was claimed further that this paragraph empowered those officials to authorize the use of adulterated drugs for the making of official fluidextracts. Assuming that it did relate to the use of such drugs, instead of to the forms of the drug, it could not relate to the manufacture of official fluidextracts, since this would destroy the entire purpose of the standards of the Pharmacopœia. Both the quality of the drugs and the forms in which they are to be used for making fluidextracts are definitely specified by the Pharmacopœia in every case. In short, this exemption clearly refers to the form of the drug when it is to be used for extracting the alkaloid, or for some similar manufacturing purpose. I therefore submit that the paragraph in question (*a*) refers only to the physical forms of the drug and not to its quality; (*b*) that the 'manufacturing purposes' referred to does not include the manufacture of any galenical preparation.

"7. 'Official preparations are to be made only from drugs that conform to the pharmacopœial standards, definitions, and descriptions.' (U. S. P., General Notices, page 1, fourth paragraph.)

"It is claimed that this paragraph means that preparations may be made from vegetable drugs that do not conform, as stated, provided that a larger amount of such drug than is directed is used, in order to cause the preparation to be of the normal strength. For example, that opium containing only half the required percentage of morphine may be used, provided a double quantity of it is taken.

"I submit that this claim is denied by the Pharmacopœia itself when it directs that opium of a lower strength shall be mixed with opium of a higher strength to produce a mixture of normal strength, before the manufacture of the preparation can be started. In this case, the drug itself which does not conform to the requirement is made to conform before it can be used. This is an entirely different process from that of making the preparation from it while still defective, even when a larger quantity is employed.

"It has also been claimed that the defective drug could be used in the amounts specified by the Pharmacopœia and that alkaloid can subsequently be added to the preparation to bring it to the required strength. To many persons, it appears that such a procedure is unobjectionable and should be permitted, but that is not the question before us, which is as to whether this present paragraph offers such a provision. It assuredly does not.

"(*a*) I therefore submit that this statement can mean only that a drug that does not so conform shall not be used for making the preparation specified, so long as its nonconformity continues. If it is to be used at all, it must be made to conform before the manufacturing process is commenced.

"(*b*) It does not provide for the use of a drug that does not conform and afterward causing the preparation made from it to conform.

"8. 'Vegetable drugs are to be as free as practicable from insects or other animal life, animal material or animal excreta. They are to be free from moldiness and show no discoloration, abnormal odor, sliminess, or deterioration due to any cause.' (U. S. P., General Notices, page 4, last paragraph.)

"It is claimed that if the objectionable animal matter here referred to is removed by 'reconditioning' from a drug that contains it in excess, the quality of that drug will then not be objectionable. Conceding that it might not be objectionable, I maintain that this does not necessarily follow. The presence of the animals or animal matter may itself have produced an injurious change in the drug; also, the condition which caused the animal matter to appear in the drug may have damaged the drug as well.

"In the case of moldiness, discoloration, abnormal odor and sliminess, it must be assumed that chemical changes have occurred in the drug, and it is for this reason that the paragraph declares that there shall be 'none' of these conditions. Moldiness cannot occur without dampness and dampness is almost certain to tend to deterioration.

"Discoloration due to dust or other deposited substance may be harmless, but when due to chemical destruction of the original coloring matter, there must have been chemical change. The same is true of abnormal odor and sliminess. I therefore submit that

"(*a*) This statement cannot be construed as meaning that if insects and other animal matter that has been present in excess is removed by reconditioning, the drug is then necessarily fit for use.

"(*b*) That, in the case of 'moldiness, discoloration, abnormal odor, and sliminess,' no allowance is made for these defects to any extent. Nevertheless, it would be physically impossible to determine absolute absence, as that not one spoiled seed existed in a ton. Even in chemical assaying, a variation up to five or ten per cent from the requirement has always been allowed, under the recognized compulsion of necessity. This requirement cannot be construed as to the existence of one or more individual fragments or units, but to the lot of 'vegetable drug' as a whole; that is in reference to its general character. If a considerable part of it shows even a little defect, the lot of 'vegetable drug' is defective, whereas if only a few particles are defective, even much so, the lot of 'vegetable drug,' as a whole, is not defective.

"9. Without presenting a direct quotation, I refer next to the well-known official specifications for the making of fluidextracts, by the use of 1000 grams of drug for making 1000 cc. of fluidextract, as for example, type B, it is provided that if the preparation so made is of excessive strength, it shall be appropriately diluted. I have not succeeded in finding any person who can show me any authority in the pharmacopœia for the use of more than 1000 grams of drug for making 1000 cc. of the fluidextract.

"10. 'In order to facilitate the adoption of the biological assay standards of the Pharmacopœia, and to provide a greater degree of uniformity in their application, the Bureau of Chemistry of the U. S. Department of Agriculture at Washington, D. C., has indicated its willingness to supply standard substances conforming to the pharmacopœial requirements.' (U. S. P., General Notices, page 4, first paragraph under 'Biological-Assay Standards.')

"The phrase 'to facilitate the adoption of the biological assay standards of the Pharmacopœia' constitutes clear evidence that the Bureau of Chemistry has no authority to fix or adopt such assay standards, this responsibility resting wholly with the Committee of Revision, which is provided with specialists in all lines to insure accuracy in this work.

"The phrase 'to supply standard substances conforming to the pharmacopœial requirements' implies that the Revision Committee, to whom they are to be supplied, is to determine whether or not they do conform to the pharmacopœial requirements.

"The question here presented is probably the most important of any of those that are engaging our attention, for it appears that all proceedings regarding certain drugs that have been taken under the present Pharmacopœia have been illegal. No fact is more definitely assured and less capable of being questioned than that the Revision Committee is the only body that can legally fix and determine the standards that are embodied in the Pharmacopœia. In the case of such a drug as ergot, they must decide what kind of ergot is to be adopted as a standard, to determine the tests for its identity and purity, to designate its physical characteristics and requirements, to select ten samples from which the standard fluidextract is to be made, to make or cause to be made that standard fluidextract, to determine whether it conforms to requirements and to determine the amount of it that shall be required to produce the designated effect on the comb of the rooster. What the Bureau of Chemistry has been authorized to do by the action of the Revision Committee is merely to 'supply standard substances' thus designated by the Revision Committee, and substances 'conforming' to the U. S. P. requirements, which are to be accepted by the Revision Committee only after that Committee shall have determined that they do so conform. If any of the above procedures on which the character and quality of the official drug or its preparation depends shall be left to the judgment of the Bureau of Chemistry or any other body, it follows that the Revision Committee is not the party that is fixing the standard.

"Not only is this view in accordance with the language of the paragraph quoted, but there are the soundest reasons why it should be so. The Revision Committee has been selected and organized for the purpose of supplying every form of service necessary to insure the most perfect results in the fixing of its standards. While they may properly seek outside information and advice and secure outside technical assistance, they cannot properly shift the ulti-

mate responsibility in matters of decision to any outside parties, and certainly not to an outside party that fixes as a standard the quality of a defective drug or preparation, with the result that all manufactured products conforming to that standard must of necessity possess the defects of the standards itself."

At the conclusion of his paper Dr. Rusby asked for the following resolution to be adopted:

> "Resolved that it is the sense of the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION assembled at this meeting that the above interpretation of the language of the Pharmacopœia is correct."

Dr. Rusby said that it was his intention that each of his interpretations should be considered separately with this introduction.

The President asked that the consideration of the resolution should be held over until after the discussion had taken place. He then called upon Chairman E. Fullerton Cook, of the U. S. P. X and XI Revision Committees, who had been invited to take part in the meeting.

DISCUSSION BY CHAIRMAN E. FULLERTON COOK.

Professor Cook said that he had received an abstract of Dr. Rusby's paper for consideration prior to the meeting and had prepared the following statement of his views: "It is not one of the duties of the Chairman of the Committee of Revision of the U. S. P. to interpret the precise meaning of provisions of the Pharmacopœia, which may be in dispute. That ultimately must rest with a court if an authoritative interpretation is to be reached.

"It is of course the privilege of any one who may care to do so to express an opinion. You have just heard such an opinion from Dr. Rusby.

"I shall not attempt to predict the decision of a court should it be asked to rule upon the question raised, but it may clarify the situation somewhat if certain elements are reviewed.

"The Foods and Drugs Act among its other provisions prohibits the importation of adulterated or misbranded drug products. The Act itself adopts the standards for drugs laid down in the United States Pharmacopœia and National Formulary. Drug products offered for importation into the United States under names recognized in these authorities must conform in strength, quality and purity with the requirements established therein. The statute provides, however, that a drug which does not meet the specifications of the United States Pharmacopœia or National Formulary shall not be deemed adulterated, *'if the standard of strength, quality or purity be plainly stated upon the bottle, box or other container thereof, although the standard may differ from that determined by the test laid down in the United States Pharmacopœia or National Formulary.'* The law itself, therefore, authorizes the importation of substandard drug products under appropriate labeling. This provision will be found in Section 7 of the Act.

"This provision within the Federal Food and Drugs Act itself would therefore permit the importation of substandard drugs, providing they are properly labeled to show their deviation from the Pharmacopœial requirements. Under such conditions what control over their distribution for use would there be after such substandard drugs had once been entered?

" 'Regulation 30' was devised as a means whereby such substandard drugs could be utilized through legitimate channels and the public protected against the free importation and promiscuous use of inferior drugs.

"Note that Regulation 30 permits the use of such substandard drugs only by firms of established integrity and then only under bond and for the manufacture of preparations of standard strength. The products are not to be released for sale or distribution until the Government has evidence of the official character of the preparations made from the substandard drugs and only then is the bond returned.

"I am informed that the practices embodied in Regulation 30 have been permitted from the earliest days of the enforcement of the Food and Drugs Act and, so far as I can learn, its application was never seriously questioned until recently. Certainly, for at least two decades it was known to be a Government policy by those on the U. S. P. Committee of Revision who were familiar with the subject of fluidextracts, extracts and tinctures and no one on the Committee considered it improper or at least protested against it.

"It was my personal understanding that one of the 'General Notices' already quoted covered the situation. It reads as follows:

" 'The official definitions and standards for vegetable drugs apply to all forms in which they may enter commerce, whether whole, cut, ground, powdered or otherwise prepared for use, unless specifically exempted in the monograph or admitted under authority for manufacturing or for a special purpose.' (U. S. P. X,

page 4.) By omitting the words which apply to another provision, also covered by the paragraph, its direct application to Regulation 30 will be more clearly seen.

"Let us read it again so abbreviated:

" 'The official definitions and standards for vegetable drugs apply to all forms in which they may enter commerce . . . unless . . . admitted under authority for manufacturing or for a special purpose.'

"No one has questioned the clear mandate of the Pharmacopœia that the ultimate product, the one administered to the patient, shall be of full strength and efficiency.

"This is brought out under the formulas themselves when such products are capable of standardization, and remember that only standardizable drugs are allowed entrance under Regulation 30. Take for instance Fluidextract of Hyoscyamus, the requirement reads: 'Fluidextract of Hyoscyamus yields from each 100 cc., not less than 0.055 Gm. and not more than 0.075 Gm. of the alkaloids of Hyoscyamus.'

"When the Sub-Committee on Proximate Assays fixed 'not less than 0.065 per cent of the alkaloids of hyoscyamus' as the U. S. P. X standard for hyoscyamus leaves, they used the best information available concerning the average alkaloidal strength of a good grade of hyoscyamus leaves, but such judgment is not infallible and nature does not obey the laws of man, so that, so I am told, much of the hyoscyamus leaves imported within the last few years, though authentic hyoscyamus leaves of good quality, have not contained as much as 0.065 per cent of alkaloids.

"Under such circumstances what is to be done? There are at least three possibilities.

"1. These substandard leaves could be refused entrance and sent back to Europe.

"2. Or, under the provision of the Food and Drugs Act, they could be labeled to show the deficiency in alkaloidal content and admitted without any further control as to their use or sale.

"3. Or, under Regulation 30, they could be sold to a reliable manufacturer, under bond, for the purpose of making an extract, fluidextract, or a tincture of full Pharmacopœial strength.

"What is the logical course to follow with every interest considered? Does the patient who is the first to be thought of suffer from following the third possibility? Would the patient, needing therapeutically active hyoscyamus be served by following either the first or second policy? Of course, if there is any specific instance in which the application of this third policy would be dangerous or injurious to the patient, that drug should be specifically exempt from any such treatment.

"This brief discussion will serve to indicate the many problems involved in the wise administration of a law such as the Food and Drugs Act. There must ever be kept in mind the unvarying purpose of the Act as exemplified by the man who is rightly called its 'Father,' Harvey W. Wiley. The passion of his life was 'truth and honesty.' We must endeavor to meet the actual situations forced upon us by natural and economic laws and handle these wisely so that the ultimate end is reached, which, in the case of the Pharmacopœia, means *standard and efficient therapeutic agents made readily available for the prevention and cure of disease.*

In commenting upon Dr. Rusby's paper, Prof. Cook said that he believed Dr. Rusby's interpretations were mainly correct; however he held that if Section 7, paragraph 1 of the paper or paragraph 6 of the abstract reading *"Official preparations are to be made only from drugs that conform to the pharmacopœial standards, definitions, and descriptions"* (U. S. P., General Notices, page 1, fourth paragraph)) were the only clause of its nature, the use of nothing but standard drugs would be enforceable, but its meaning was modified by Section 6, paragraph 1 of the paper (or paragraph 4 of the abstract reading, *"The official definitions and standards for vegetable drugs apply to all forms in which they may enter commerce, whether whole, cut, ground, powdered, or otherwise prepared for use, unless specifically exempted in the monograph or admitted under authority for manufacturing or for a special purpose"* (U. S. P., General Notices, page 4, first paragraph, under "Vegetable Drugs")) which permits the use of substandard drugs by reputable manufacturers under Regulation 30 of the Food and Drugs Act.

Professor Cook also explained in detail how the Bureau of Chemistry, which was charged with the enforcement of the Food and Drugs Act, had given its coöperation to the Pharmacopœial Revision Committee by issuing standardized materials conforming to the standards of the U. S. P.; this was work which, for financial reasons, the Pharmacopœial Revision Committee could not carry out itself.

REMARKS BY E. L. NEWCOMB.

The President now called upon Chairman E. L. Newcomb, of the Sub-Committee on

Botany and Pharmacognosy of the U. S. P. X and XI Revision Committees, who was one of those invited to take part in the discussion.

Dr. Newcomb's remarks were as follows: "It is unfortunate that the English language permits of such varying interpretations. It always has been so, and probably always will be.

"Two distinctly different interpretations have been placed on Section 6, paragraph 1 of the paper (or paragraph 4 of the abstract), as submitted by Dr. Rusby. The Sub-committee on Botany and Pharmacognosy of the last Revision Committee I am very sure placed a somewhat different interpretation than has been thus far outlined here this evening.

"First, let me say that it is my recollection that Section 6, par. 1 of the paper (or par. 4 of the abstract) and Section 7, par. 1 of the paper (or par. 6 of the abstract), as submitted by Dr. Rusby, were part of some general principles submitted to the former Sub-committee on Botany and Pharmacognosy by Dr. Alsberg. The former Sub-committee spent a great deal of time studying these declarations, and I believe was responsible for Section 7, par. 1 of the paper (or par. 6 of the abstract), as submitted by Dr. Rusby, being included in the present Pharmacopœia. I feel certain that it was the thought of the Sub-committee that all U. S. P. preparations, that is, tinctures, fluidextracts or extracts, should be made only from drugs that conform to pharmacopœial standards, definitions and descriptions. The former Sub-committee did not feel that the clause in Section 6, par. 1 of the paper (or par. 4 of the abstract)—'admitted under authority for manufacturing or for a special purpose'—necessarily permitted the use of sub-standard drugs for making pharmacopœial preparations. Our interpretation of this clause was that such exemption would permit, under proper authority, the allocation of sub-standard drugs for manufacturing non-pharmacopœial preparations. Very large quantities of drugs, standards for which are provided in the U. S. P., are used in the manufacture of preparations, standards for which are not included in the Pharmacopœia. It is true that Section 6, par. 1 of the paper (par. 4 of the abstract) does not specifically state 'for manufacturing non-pharmacopœial preparations,' but Section 7, par. 1 of the paper (par. 6 of the abstract) does specifically state that drugs used for making official preparations must conform to the standards. In other words, the exemption provides for use of sub-standard drugs for limited manufacturing purposes. The former Sub-committee did not feel, with this interpretation, that the two paragraphs were necessarily in conflict.

"It seems to me that we should not lose sight of the fact that with all of the discussion which has taken place on these principles, there has been very little criticism of the principles as a whole. For the most part they are undoubtedly sound and proper, as both Chairman Cook and Dr. Rusby have stated. If there is a lack of understanding, then it is fortunate that the subject is now being discussed, as it is the duty of the present Revision Committee to so change the principles that there may be no misunderstanding as to what is the intention."

The meeting was now thrown open for discussion and Professor Cook pointed out that it was impossible to get Benzoin that conformed to the solubility requirement of the U. S. P. and that the drug had been released under Regulation 30. Dr. Newcomb said that there was an error in the monograph on Benzoin. Dr. Rusby held that the Pharmacopœial Convention gave authority to the Revision Committee to change the standards of the Pharmacopœia at any time, and these should be changed if they are in error, rather than that the Bureau of Chemistry should take action under Regulation 30.

OTHER SPEAKERS.

Chairman J. P. Snyder, of the Contact Committee of the American Drug Manufacturers' Association, said that he could confirm the general statements of Professor Cook; he did not think it advisable to act upon the resolutions of Dr. Rusby's paper without a representative of the U. S. Department of Agriculture being present.

Dr. Rusby pointed out that Professor Cook's remarks about the law and the regulations did not, in his opinion, bear on the subject since his paper referred solely to the language of the Pharmacopœia. He also felt that the standards of the U. S. P. X should be adhered to, until changed; and that he would like the incoming Pharmacopœial Committees to get the benefit of the evening's discussion.

Dean Arny stated that he had heard the matter of this evening's meeting discussed for the past three years and still felt that it was so highly technical that it was difficult to vote upon.

Professor Cook said that he was glad the matter had been placed before the new Revision Committee and that Dr. Rusby's paper would be submitted in full, together with all information gathered at this evening's meeting, to the members of the Committee.

The President asked Dr. Rusby if he would consider referring his resolutions to a Committee of Three on Resolutions as he had suggested at the beginning of the meeting, saying that he would give Dr. Rusby the privilege of selecting the three members. Dr. Rusby said that he was leery of referring resolutions to committees and that he wanted an expression of opinion from the meeting as a whole.

Dean Arny asked Dr. Rusby if he would accept a substitute motion which would read as follows: "That the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION here assembled approves of the sentiments expressed in the printed abstract of Dr. Rusby's paper" (which had been prepared by him and circulated among the members present). Dr. Rusby was unwilling to accept this.

President Fischelis said that he would only entertain resolutions in accordance with Article III of Chapter VII of the By-Laws of the A. PH. A. governing the actions of Local Branches. The Chair was sustained in this matter by a vote of 6 to 5, the remaining part of the large audience abstaining from voting.

Dean Dandreau expressed some comments on the two conflicting paragraphs that had been the crux of the discussion and felt that the ambiguity as brought up, should be clarified.

Dr. Rusby then rose and said that he was not interested in referring his resolutions to the parent body for action, but that he only wanted an expression of opinion of the New York Branch, as here assembled, and he thought that it was competent to voice an opinion on the matter. He felt that, as things had turned out, he had lost all interest in the matter.

A motion was made and carried to thank Dr. Rusby for his paper, and Professor Cook and Dr. Newcomb and others for participation in the program. The meeting then adjourned.

HERBERT C. KASSNER, *Secretary.*

NORTHWESTERN.

A joint meeting of the Northwestern Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION and the Scientific and Practical Section of the Minnesota State Pharmaceutical Association was called to order at 9:00 A.M., Thursday, Feb. 19th in the convention room of the Lowry Hotel, St. Paul, Minn.

Talks upon subjects of general interest were given by President L. D. Coffman of the University of Minnesota, H. C. Christensen, president of the A. PH. A., and D. F. Jones, past-president of the A. PH. A.

Beside the customary committee reports and historical papers, the following papers of scientific interest were either presented or read by title.

"The International Standard for Digitalis," F. A. U. Smith.

"Adventures in Botany," G. J. DeMars.

"Research in Pharmaceutical Education," Dean F. J. Wulling.

"The Present Necessity of the Minimum Four-Year Course," J. A. Lacher.

"Post-Graduate Study in the College of Pharmacy of the University of Minnesota," Prof. C. H. Rogers.

"The Changing Order of American Pharmacy" (illustrated lecture), A. Hogstad, Jr.

"Disintegration of Aspirin Tablets," D. D. Turner.

"Drug Store Types as Seen by an Outsider," C. E. Smyithe.

"Proposed Method for Quantitative Analysis of Solution of Sulphurated Lime N. F.," Laurine Jack, Prof. G. Bachman.

"Hydrogen-Ion Concentration. The Meaning of the Term and Its Application to Pharmacy" (illustrated), C. V. Netz.

"Digitalis. Growth, Collection and Assay at the College of Pharmacy, University of Minnesota" (illustrated), Prof. E. Fischer.

The meeting was attended by three hundred members of the A. PH. A. and the Minn. S. Ph. A. Dean Wulling presided with the assistance of Rugnar Almin, chairman of the Northwestern Branch.

The papers presented at this meeting will be printed in the "Proceedings of the Minnesota State Pharmaceutical Association" for 1931.

C. V. NETZ, *Secretary.*

A joint meeting of the Northwestern Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION and the Wulling Club of the College of Pharmacy, University of Minnesota, was called to order at 3:30 P.M. in the auditorium of the College of Pharmacy, on Feb. 16th.

About two hundred members of the Northwestern Branch and student body welcomed the speaker, N. Vere Sanders of Albert Lea,

president of the Minnesota State Pharmaceutical Association, who talked upon "A Druggist's Responsibility to His Community."

C. V. NETZ, *Secretary.*

ADDRESS OF THE CHAIRMAN OF THE PRACTICAL AND SCIENTIFIC SECTION.*

BY FREDERICK J. WULLING.

The past year has been replete with pharmaceutical progress. Additions to the materia medica have been numerous; advancements in educational and practitional standards have been noteworthy; a definite trend back to professional practice became more definite and emphatic; a new decade of pharmacopœial and National Formulary revision and improvements was inaugurated at Washington, D. C., in May; successful attempts to improve the contacts and relationships of medicine and pharmacy can be recorded; a more extensive and satisfactory coöperation of all pharmaceutical interests, especially of the Boards and the Colleges, was signally stimulated and a general uplift of things pharmaceutical became apparent to all observers. To enumerate all of these progressive steps would require more time than is at the disposal of the Section. They have all been recorded in the current pharmaceutical press and I refer you to the published accounts.

It is the purpose and function of this Section to stimulate every endeavor and agency helpful in the development of our profession. The work of the Section is exemplified in the program offered for this meeting which ought to prove of value not only to Minnesota pharmacy but to pharmacy everywhere. The work of the Section is concerned primarily with the present, but also with the past and the future. We should learn many lessons from the past and apply them to the present and to the future. A study of the past reveals the fact that many of our present problems owe their existence to a lack of foresight. It is often less difficult to prevent or obviate problems than to solve them after they have arisen, but foresight and forethought are necessary to prevent them. In this respect pharmacy has been lacking in the past. Shall we of to-day continue in the old way of living from day to day or should we begin to look forward to the future and take steps to formulate forward-looking programs? The necessities of to-day include, I am convinced, a careful and wise consideration of the future, so that following generations need not waste their energies in combating evils which could have been prevented, but utilize their energies and forces for constructive and generally useful and affirmative work.

To formulate an inclusive and complete program for the future requires more than one head. Each of us could contribute something toward it. A few of my suggestions are:

1.—A loose federation, not a merger, of all the present pharmaceutical organizations to do needed things collectively and which no one group or association can do alone. Some of the things such a federation could do are: (*a*) procure more uniform state laws insuring greater uniformity in professional, practitional and educational standards; (*b*) better faculties and colleges and eliminate cramming schools; (*c*) secure higher quality of Board personnel; (*d*) hasten the slow transition now going on toward professional rehabilitation; (*e*) establish a pharmaceutical corps in the U. S. Army; etc.

2.—Of the things we should do here in Minnesota I mention a few: establish (*a*) a pharmaceutical library that will be as representative as any; (*b*) a pharmaceutical museum that will save for future generations a physical picture of the progressive history of Minnesota pharmacy; (*c*) a gallery of photographs or portraits of the pioneers and pharmacists of prominence of the present and following generations; (*d*) a central pharmaceutical laboratory for the State Board, with which could be combined experimental and research work; (*e*) a suitable building erected and maintained at state or private expense to house the library, museum, gallery and laboratories and offices of the State Association and the State Board. There are such buildings or similar ones. I have in mind the building of the American Medical Association in Chicago; the building of the Pharmaceutical Society of Great Britain in London; the building now in process in Washington, D. C., to be known as the American Institute of Pharmacy, and others.

3.—At the University there should be created at the College of Pharmacy: (*a*) five or more scholarships comparable with the present M. S. P. A. scholarship; (*b*) five or

* Read at the Joint Meeting of the Northwestern Branch, A. PH. A., and the Scientific and Practical Section, Minnesota State Pharmaceutical Association, St. Paul, Minn., February 9, 1931.

more fellowships carrying annual sums of from $500 to $2500 for research, teaching, etc., relating to the good of the profession and not commercial in nature; (*c*) endowments or assured annuities to create sufficient incomes for the scholarships and fellowships.

This is only a partial program. Is it too ambitious? I think not. Pharmacy is one of the well-to-do professions. It could well afford the necessary expenditures without overmuch sacrifice. Willingness and a sufficient amount of justifiable pride are necessary. We should create both. It is not my purpose now to indicate how this can be done, but only to point to the possibility. But we ought to make a beginning at once by establishing a few more scholarships and certainly several fellowships. I have many times suggested doing this, the first time in 1893. It is high time that the Association which represents Minnesota pharmacy in its entirety, should give serious consideration to these matters. The first problem will relate to the raising of the necessary money, preferably for sufficient endowments. I earnestly recommend the appointment of a committee to give these suggestions serious study and to report at our next meeting.

WESTERN NEW YORK.

The December meeting of the Western New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, was held Thursday, the 11th, in Foster Hall, on the University of Buffalo campus. The minutes of the previous meeting were read and approved. The following new members were introduced: Karl Smither, Alexander Kovach, Harold F. Jones and James J. Dargan.

The entertainment committee reported that Leon M. Monell was preparing something of interest in show-card writing, to be ready probably in February or March.

Mr. Freeman announced that efforts were being made to hold a joint meeting with the Erie County Medical Association.

Mr. Seibert stated that noteworthy things in Pharmacy are being performed daily around us without recognition, and suggested that some method of noticing such things could be devised.

Dr. Lemon called attention to the Academy of Pharmacy in New York City. Mr. Seibert replied that the intention was to give attention and recognition to individual efforts for bettering the conditions in Pharmacy locally. Dr. Lemon suggested that one award could be made yearly at a banquet.

Mr. Freeman appointed the following committee to investigate the desirability of such a proposition: *Chairman*, Mr. W. L. Seibert, Messrs. Karl Smither, R. David Allen, John A. Handy and Dr. A. B. Lemon.

The program of the evening was introduced by movies, secured by Dr. Lemon from the E. R. Squibb Co. entitled "Sunshine from the Sea."

George W. Fiero, the speaker of the evening, presented as his topic—"The Pine Board Drug Stores." He said, in part, that these stores evolved from "cut rate" tobacco stores, slowly adding such items as razors, shaving creams, etc., to their line. Their name is derived from the fact that the fixtures in some stores consisted of unpainted pine shelving and tables.

Most of these stores feature a comparatively small line of active-selling, nationally advertised preparations, very few "long-shots," use cheap help, carry no drugs and have no prescription department, although some have a pharmacist in charge, merely to enable them to use the name "Drug Store" in their advertising. They usually have a small store, not on a corner, are closed at night, and have huge piles of stock, which are dumped into paper sacks when sold.

The profit in pine board stores averages 10 to 15 per cent, but little money is invested, and a huge turnover enables them to operate. They also buy bankrupt stocks, and in large quantities, in some cases controlling wholesale houses. They buy their goods chiefly in Chicago and New York from brokers, etc., and in some cases from retail pharmacists. To fight these stores, wholesale houses in one city cut their prices so that the retailer was enabled to compete, finally running the pine board stores out. In another town, 42 druggists banded together, opened a pine board store of their own, and drove the other out. This was helped by newspaper and radio appeals to the citizens to aid home industry, etc.

The pine board side of the question is this—they are legitimate merchandisers, obeying the law. They can make money and supply goods to the consumer for less money. A survey showed that only 22 per cent of pharmacists have definite selling plans. Should they be compelled to help the less active pharmacists?

After considerable discussion following the presentation of this subject, the meeting was adjourned.

L. D. LOCKIE, *Secretary.*

FORTY-FIFTH ANNIVERSARY OF THE SCHOOL OF PHARMACY OF THE UNIVERSITY OF BUFFALO.

On April 30, 1931, the students, faculty and alumni will celebrate the 45th anniversary of the University of Buffalo's School of Pharmacy and at the same time will pay honor to Dean Willis G. Gregory. Dr. Gregory has been associated with the School since its founding and has been its Dean since 1890.

A banquet will be held at the Hotel Lafayette. The speakers of the evening will be J. W. Sturmer, Dean of Science of the Philadelphia College of Pharmacy and president of the American Association of Colleges of Pharmacy, and Dr. Samuel Paul Capen, Chancellor of the University of Buffalo. Guests of honor will be: President H. C. Christensen and Secretary E. F. Kelly, of the AMERICAN PHARMACEUTICAL ASSOCIATION; Assistant Commissioner James Sullivan, of the State of New York for Higher and Professional Education; W. W. Charters, professor of Education of Ohio State University. Other honor guests will include the deans of the N. Y. State Colleges of Pharmacy: H. V. Arny, Columbia; W. C. Anderson, Brooklyn; Jacob Diner, Fordham; W. Mansfield, Albany and J. L. Dandreau, St. Johns; the deans of the University of Buffalo: Edward W. Koch, *Medicine;* Carlos C. Alden, *Law;* Daniel H. Squire, *Dentistry;* Julian Park, *Arts and Sciences* and C. S. Marsh, *Business Administration*.

All alumni and friends of the University are cordially invited to attend. Reservations may be made by writing or calling Dr. M. C. Swisher, Foster Hall, University of Buffalo, Cresent 9300.

OPTICAL SOCIETY OF AMERICA.

A resolution was adopted by the Executive Council of the Optical Society of America on October 30, 1930, as follows:

"It is the sense of the Executive Council of the Optical Society of America that the need for better organization of those interested in the description and specification of color which found expression at the 'Color Conference' held in Washington, May 14, 1930 (at which conference the Optical Society was officially represented) can best be met by the formation of a joint council consisting of officially designated representatives of the several national societies and associations interested in the description and specification of color.

"It was further decided that the President should write a letter to Prof. E. N. Gathercoal explaining the attitude of the Optical Society and calling attention to the colorimetry program to be held in New York on February 26, 1931 as offering a favorable opportunity for a further conference on the subject."

Those who attended the Pharmacopœial Convention will recall the interesting and educational color exhibit which impressed the importance of color standardization.

On February 26th and 27th, the Optical Society of America held its regular sp ing meeting in New York City. Several sessions were devoted entirely to papers dealing with colorimetry and color specifications. A program of invited papers on colorimetry, color specification and spectrophotometry was arranged. Many of these papers dealt specifically with practical applications of color measurement and specification in various industries.

FIRST MARIJUANA CHARGE IN DALLAS COUNTY.

A Mexican was placed in the county jail January 28th after a charge of selling marijuana had been filed against him in Dallas County Criminal Court, the first time in history of that body such a charge has been brought against a defendant.

Penalty in Texas, for selling the Mexican dope weed is a fine of from $25 to $500 or a jail sentence running from one month to one year.

RETIREMENT OF REAR ADMIRAL STITT.

Rear Admiral Edward Rhodes Stitt, medical corps, U. S. Navy, inspector of medical department activities in the San Diego naval district, and former chief of the bureau of medicine and surgery, Navy Department, has been granted leave from his present duties, preceding his retirement August 1, 1931, upon reaching the statutory retirement age.

Rear Admiral Stitt was born in Charlotte, N. C., July 22, 1867, and was appointed an assistant surgeon in the Navy in 1889. He is a graduate of the University of South Carolina, the University of Pennsylvania and of the Philadelphia College of Pharmacy.

PUBLIC FACING MONOPOLY.

PRESERVATION OF COMPETITION PUBLIC'S ONLY PROTECTION.

CAPPER-KELLY BILL DESIGNED TO CHECK THE USE OF PREDATORY PRICE-CUTTING TO BUILD MONOPOLY.

HOW TO MAKE THE CAPPER-KELLY BILL A LAW.*

BY EUGENE C. BROKMEYER.

Unless checked by law yet to be enacted, or by the enforcement of existing law, the consuming public ultimately will find itself at the mercy of monopolies in the production and distribution of the necessaries and luxuries of life. The mass producers and distributors themselves are advertising this obvious fact. As late as February 10, 1931, Chain Store Shareowners, Inc., representing the common stocks of apparel chains, drug chains, 5 and 10 cent chains, grocery chains, mail-order chains, restaurant chains, shoe chains and sporting goods and auto supply chains, advertised in the *Washington* (D. C.) *Star* that "the chain store industry today transacts 16 per cent of the nation's retail merchandising—a volume of $6,500,000,000—and conservative authorities predict a doubling of this volume within 10 years." This "investment trust" further advertises that the chain store industry is "three times as big today as it was 10 years ago" and that "the chain system of merchandising has supplied a method of distribution that has become essential to mass production." The same advertisement was published in the *Saturday Evening Post* of January 24, 1931.

"For years the chain stores have ploughed back into their individual businesses for future development from 40 per cent to 60 per cent of net earnings—a greater proportion of net earnings on common stock than any other industry," the advertisement continues. Whose money has been "ploughed back" into the chain store industry for future development? The consuming public's money. The remarkable thing about it is that this consuming public has been led to believe and to-day thinks that it has been the beneficiary of nothing but "bargains" generously handed out by chain and department stores and mail-order houses.

UNEMPLOYMENT INCREASED.

Unwittingly the consuming public by its patronage of chain and department stores and mail-order houses has spread unemployment. "In 1929 alone 265,000 salesmen were thrown out of jobs as the result of food mergers. In the last eight years 300,000 independent merchants have been put out of business by chain store methods of competition," Clyde Kelly stated in an address to the House of Representatives on January 29, 1931.

THE BUSINESS DEPRESSION.

For the first time in the history of this great country we heard of "profitless prosperity" in the years 1928 and 1929. This was the result of cut-throat competition. According to W. T. Grant, of the Grant Department Stores, from three to five billion dollars' worth of goods was sold at less than the cost of production in a retail merchandising price war. Those who innocently thought they were taking advantage of this predatory price-cutting are now holding the bag. The general business depression is the price of that method of doing business. The chain store industry has not suffered, according to ts own testimony.

COSTLY "BARGAINS."

Proof of the enormous profits made by the Macy chain of department stores in New York, Newark and Atlanta was presented to the House by Clyde Kelly and presented by Senator Brookhart recently to the Senate in the form of a table based on a record of purchases by customs' agents at the direction of Secretary of the Treasury Mellon under a resolution of the Senate when the last two tariff bills were under consideration. It was desired to learn the effect of the tariff on retail prices of imported merchandise. The trick of predatory price-cutting is to attract

* Summary of an address before the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, February 24, 1931.

unsuspecting purchasers with price-cut nationally advertised brands and fleece them with unidentified merchandise. The chains also use their own private brands as substitutes for well-known and popular brands. The excessive profits made out of the public on private brands and unidentified merchandise, whose value is not known by the public, make the large net earnings regularly "ploughed back" in the chain store industry. Here are a few of the items taken from Secretary Mellon's record showing the margin of profit of R. H. Macy & Company on imported goods:

Article.	Landed cost.	Retail price.	Percentage of price to cost.
Pie plate	$0.103	$0.29	181
Glass lamp dome	0.458	1.74	280
Glass lamp chimney	0.0641	0.23	258
Salad set	1.64	4.75	189
Marcel iron	0.1251	1.39	1,012
Barometer	1.40	7.94	467

Sauce pot, dinner set, dinner plate, aluminum teaspoon, sewing basket, scrub cloth, castile soap, steamer rug, bridge set, Apollinaris water and beaded trimming were also reported in Secretary Mellon's table of imported goods which were sold by R. H. Macy & Company at profits ranging from 136 per cent to as high as 580.

MAKES FOR MONOPOLY.

What a prophet was Hon. Louis D. Brandeis, now Associate Justice of the Supreme Court of the United States. In *Harper's Weekly* on November 15, 1913, he said: "Americans should be under no illusions as to the value or effect of price-cutting. It has been the most potent weapon of monopoly—a means of killing the small rival to which the great trusts have resorted most frequently. It is so simple, so effective. Far-seeing organized capital secures by this means the coöperation of the short-sighted unorganized consumer to his own undoing. Thoughtless or weak, he yields to the temptation of trifling immediate gain; and, selling his birthright for a mess of pottage becomes himself an instrument of monopoly."

NOT PRICE-FIXING.

The Capper-Kelly Bill is not a price-fixing measure. The opposition called it such to defeat it. The public's objection to price-fixing—which must be at the public's expense—was well understood. The misrepresentation of the bill appears the moment it is read. Unfortunately the public does not read bills introduced in Congress. The Capper-Kelly Bill expressly provides that the contracts it sanctions be limited to trade-marked articles in "fair and open competition with commodities of the same general class produced by others."

FORD MAINTAINS PRICES.

Henry Ford fixes and maintains the prices of his products; so does General Motors, General Electric and all the other Generals. The price is fixed and maintained through the agency or consignment system of distribution. Has anybody been heard to complain of price-fixing and price maintenance as practiced by large aggregations of capital who can organize and operate the agency or consignment system of retail distribution? If it is wise and legal when practiced by large capital, why should it not be equally sound and legal for independent manufacturers, wholesalers and retailers to practice price maintenance through the contract system? This is all the Capper-Kelly Bill authorizes. It applies only to competitive trade-marked articles, thus safeguarding the public against price-fixing. Competition will protect the public against excessive prices.

THE PUBLIC'S DANGER.

The public's choice lies between mass production and mass distribution making for monopoly and the preservation of the competition of independent business men by placing them on terms of equality with mass producers and mass distributors. The Capper-Kelly Bill does this. If it does not, clearly it is up to Congress to furnish adequate and instant legislative relief in some other form. Until it does Congress is not safeguarding the public welfare.

COMPETITION PROTECTS PUBLIC.

As far back as 1914 Congress undertook to preserve competition for the protection of the public by prohibiting unfair competition. It enacted the Federal Trade Commission Act. In the light of present-day conditions that law is inadequate, or it is not being enforced. Several years ago a member of the Commission himself declared that additional legislation was necessary. The Sherman Act and the Clayton Act supplementing it are predicated on the theory that the public interest may best be subserved by the preservation of competition. It is the regulation, not the destruction of competition that the public welfare requires. The Capper-Kelly Bill interferes with no existing law. It might be said to be "An Act to promote fair competition." If it changes any provision of the Sherman Act—the one relating to contracts in restraint of trade—it does so for the purpose of effectuating the intent of Congress when it enacted the Sherman Act. In no sense, however, does the Capper-Kelly Bill amend the Sherman Act so as to legalize contracts in restraint of trade. Competition must always exist in fact wherever a contract is made under the proposed Capper-Kelly law. Although President Wilson urged that instead of sanctioning and regulating private monopoly competition should be regulated in the public interest, a large majority of the Democratic members of the House of Representatives on January 29, 1931, voted to kill the Capper-Kelly Bill. The Maryland delegation was a notable exception. The Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, the Maryland State Pharmaceutical Association, the Baltimore Association of Retail Druggists and the National Association of Retail Druggists are justly entitled to credit.

EDUCATE CONSUMERS AND CONGRESSMEN.

The enactment of the Capper-Kelly Bill in desirable form depends entirely upon the education of the consuming public and members of Congress, particularly Senators. As far back as May 15, 1912, Mr. Justice Brandeis, then off the bench, said this to a body of representative business men:

> "The only way you can get this thing (a price standardization bill) through Congress is to educate the American people on this subject. Make them understand the difference, which will become perfectly clear to any man who studies the business aspect of this; bring your facts before Congress and the people and you must succeed; but the task of education must be persisted in."

To what extent have the retail druggists of Maryland and of all the other States of the Union educated the consuming public? "Consuming public" spells voters; "voters" spell makers of Representatives and Senators. Once a public demand is created for the enactment of the Capper-Kelly Bill, Congressmen and Senators may be depended upon to do the rest. I have given this advice in speeches and in writing for years. This is my contribution to the cause of the preservation of the independent business man and the protection of the consuming public. A lawyer can only give advice; he cannot translate it into action. It is now up to the independent business men of this country. If they desire to continue in business, they will conduct well-organized and directed campaigns for the education of the consumers and the members of Congress. If they begin at once and persist in the conduct of such a campaign they will pass the Capper-Kelly Bill at the next session of Congress as surely as they will breathe if they live.

TARTARIC ACID IMPORTS.

Larger shipments both from Germany and Italy were responsible for the larger United States imports of 2,912,000 pounds ($779,000) of tartaric acid in 1930, as compared with the 2,220,000 pounds ($689,000) imported in 1929. Comparative figures for the shipments into the United States, from the two countries that are practically the sole sources follow: Germany—2,229,000 pounds in 1930, and 1,540,000 pounds in 1929; Italy—659,000 pounds in 1930, and 553,000 pounds in 1929.

BENZOL EXPORTS.

Benzol was one of the brightest spots in our 1930 chemical export trade, according to the yearly survey appearing on page 429 of *Commerce Reports* for February 16, 1931. In this article, it is stated (referring to the year 1930): ".....benzol stands out with the largest amounts ever shipped abroad, or a total of $9,600,000 worth (44,600,000 gallons)."

ASSOCIATION BUSINESS

THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1930-1931.

Office of the Secretary, 10 West Chase Street, Baltimore, Md.

LETTER NO. 8.

March 6, 1931.

To the Members of the Council:

85. Election of Members. Motions Nos. 25 and 26 (see Council Letter No. 7, page 182) have been carried and applicants numbered 162 to 207, inclusive, and H-17 are declared elected.

86. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received.

No. 208, Martin J. Adamaszek, 2040 E. Grand Blvd., Detroit, Mich.; No. 209, M. S. Adler, 1601 Snow Avenue, Tampa, Fla.; No. 210, Harold Weber Aubil, 2970 W. Grand Blvd., Detroit, Mich.; No. 211, William H. Berg, 113 N. 13th St., Newark, N. J.; No. 212, Samuel M. Best, 129 Medford St., Malden, Mass.; No. 213, W. Bosthistle, 711 Franklin St., Tampa, Fla.; No. 214, William S. Briry, 50 Holland Road, Melrose, Mass.; No. 215, Henry Brown, 432 S. Washington Ave., Scranton, Pa.; No. 216, J. Everett Brown, 224 Washington Street, Brookline, Mass.; No. 217, John S. Brumersky, 246 Greeve St., Conemaugh, Pa.; No. 218, Ralph James Carnahan, Sta. "A," E. Liverpool, Ohio; No. 219, Frank G. Case, 16851 Grand River Ave., Detroit, Mich.; No. 220, N. W. Chandler, 26 E. Mt. Vernon Place, Baltimore, Md.; No. 221, Henry H. Cheek, 1113 E. Colonial Drive, Orlando, Fla.; No. 222, Joseph B. Clower, Woodstock, Va.; No. 223, Edw. G. Cook, 4342 W. Vernon Highway, Detroit, Mich.; No. 224, Thomas D. Cook, 8014 Yates Avenue, Chicago, Ill.; No. 225, Franklyn Curtis Cooley, Dispensary, Navy Yard, Portsmouth, N. H.; No. 226, Rebecca Smith Davis, Sweetwater, Texas; No. 227, Alfred J. de Guise, 16210 Grand River Ave., Detroit, Mich.; No. 228, Thomas Donaldson, Market & 2nd Sts., Wilmington, Del.; No. 229, Donald S. Evans, Box 1592, Orlando, Fla.; No. 230, Charles O. Finfinger, 7th St., West Elizabeth, Pa.; No. 231, William E. Fossett, Halcyon Arcade No. 6, Miami, Fla.; No. 232, Victor Americus George, 384 Midland Ave., Midland, Pa.; No. 233, Noah F. Good, Carrollton, Texas; No. 234, Walter G. Grimmer, 2157 Myrtle St., Detroit, Mich.; No. 235, Herman L. Hinski, 440 Fairmount Ave., Philadelphia, Pa.; No. 236, A. L. Hughes, 240 Main Street, Sarasota, Fla.; No. 237, F. Norman Hughes, 126 Margaret St. Sarnia, Ont., Canada; No. 238, R. W. Hunter, 3827 Edwards Rd., Cincinnati, Ohio; No. 239, Francis Edmund Judge, 2717 Bryant Ave., S. Minneapolis, Minn.; No. 240, G. F. Ivey, 125 E. Gore Ave., Orlando, Fla.; No. 241, Anna Kovac, 126 Auriles St., Duquesne, Pa.; No. 242, Helen Ruth Levin, 110 Ashland Ave., Canonsburg, Pa.; No. 243, Wm. C. McClure, 310 N. Ill. St., Indianapolis, Ind.; No. 244, Sister M. Mechtildes, 14808 Lake Ave., Lakewood, Ohio; No. 245, Ester Y. H. Mehlman, 1406 Walnut St., McKeesport, Pa.; No. 246, Julius Messina, 100 W. Ostend Street, Baltimore, Md.; No. 247, Edgar Louis Michel, 215 Metropolitan Bldg., St. Louis, Mo.; No. 248, Bessie Mitchell, 761 E. 22nd St., Brooklyn, N. Y.; No. 249, Arthur C. Morey, 1943 Beacon St., Boston, Mass.; No. 250, Edmond Boxley Moses, 1101 E. Colonial Drive, Orlando, Fla.; No. 251, Lewine Murphy, Box 338, Clarinda, Iowa; No. 252, F. Carl Pape, 7712 W. Fort St., Detroit, Mich.; No. 253, Stanley W. Rogers, 6656 Fort St. W., Detroit, Mich.; No. 254, Paul L. Saylor, 11262 Charlevoix, Detroit, Mich.; No. 255, Elmer C. Schlieper, 3951 Sewickley Rd., Pittsburgh, Pa.; No. 256, Jacob Schmidt, 2301 Orem Ave., Baltimore, Md.; No. 257, Meyer Stein, 1816 N. 13th St., Philadelphia, Pa.; No. 258, Geo. G. Stilwell, 6158 W. Fort St., Detroit, Mich.; No. 259, Harry J. Stroud, Jr., 7126 Monticello St., Pittsburgh, Pa.; No. 260, Rowland H. Tibbott, 604 West Harner St., Ebensburg, Pa.; No. 261, Nathan Tischelman, 690 Eagle Ave., Bronx, N. Y.; No. 262, Roy S. Warnack, 1000 S. La Brea Ave., Los Angeles, Calif.; No. 263, Howard B. Whitsel, 730—5th Avenue, New Kensington, Pa.; No. 264, Horace Bilden Whittlesey, 308 E. Center St., Pocatello, Idaho; No. 265, Oliver W. Young, 1836 South Ave., La Crosse, Wisc.

(*Motion No. 27*) *Vote on applications for active membership in the American Pharmaceutical Association.*

87. Applicants for Membership on Account of Contribution to Headquarters Building Fund. The following non-members of the A. PH. A. have pledged $25.00 or more to the Headquarters Building Fund and have made a cash payment of $5.00 or more. They are entitled to membership and you are requested to vote on the applications which have been properly endorsed.

(Motion No. 28) Vote on application of contributor to the Headquarters Building Fund for membership in the A. Ph. A.

H-18, John Fielding Baker, Huntsville, Texas; H-19, Donald Collins, Bird Island, Minn.; H-20, Karl John Goldner, 1504—6th St., S. E., Minneapolis, Minn.; H-21, Harry Mathias Mount, 193 Electric Ave., Rochester, N. Y.

88. National Pharmacy Week. The following communication has been received from Chairman Ruth:

"Attached hereto is my report of expenses for the 1930 National Pharmacy Week Campaign. You will note that we spent considerably more money for the 1930 campaign than for that of any previous year. This is due to several reasons. First, we conducted a Pharmacy Week Exhibit at the A. PH. A. convention in Baltimore in May and at the National Association of Retail Druggists convention in Atlantic City in September at a total cost of more than $100.00. We have never before installed exhibits on such a scale and do not contemplate doing so in 1931 because, first of all, the distance between the two convention cities, Miami and Detroit, would make the freight charges quite high and besides I am not fully convinced that there is a sufficient interest manifested in the exhibit by those who attend the conventions to warrant the great amount of time necessary to collect the material and install the exhibit, not to mention the cost. It might be well to conduct an exhibit at the conventions every few years.

"Another item which contributed considerably to the expenses of the 1930 campaign was the cost of mimeographing, collating, cost of paper, etc. In addition to the numerous letters which we sent to the Presidents and Secretaries of all State and Local Associations, Deans of Colleges, Editors of Journals, etc., we released more articles to the Journals than in any previous year. We also sent out many hundreds of copies of suggestions for Pharmacy Week windows and news stories and 2500 radio talks (500 of each of five different talks suitable for radio broadcasting, talks before service clubs or publication in newspapers) practically all of which were released from this office upon request from individual retail druggists and various Associations, both local and state."

Because of the increasing interest shown in the annual Pharmacy Week observance, our mail has become very heavy the year around and exceedingly so from July to November. as we release so much material, the postage on our letters usually runs from 4¢ to 12¢ each. In addition, many of the requests come in just previous to Pharmacy Week and must be sent out special delivery. We also mailed out 350 Chemical Maps of North America from this office. As a result our postage bill has exceeded that of any previous year.

I am, however, not apologizing for the amount of money expended as we have stayed within our appropriation and I believe the results accomplished by the 1930 Pharmacy Week observance speak for themselves and justify in every particular the time, effort and expense involved.

"There is little let-up at any time of the year now on work at this office necessary to successfully conduct the Pharmacy Week movement. The Federal Wholesale Druggists' Association has offered to supply this Committee with a handsome silver cup each year, to be awarded for the best Pharmacy Week window in the United States.

"I have given a great deal of thought to the mechanics of conducting the contest and have consulted with the various members of the Executive Committee on Pharmacy Week, with the result that the following method will, undoubtedly, be employed.

We shall ask each State Association and the District of Columbia to conduct a state-wide contest. This can be done in any manner which they see fit. However, we will suggest that each state award a cup for the best Pharmacy Week window in the state; the cup to be supplied each year either by the State Association or some individual or firm located in the state but preferably by the Association. The President of the State Association will then appoint a Committee of five judges. The photographs of the Pharmacy Week windows will be mailed by the retail druggists to the Secretary of the State Association who will, in turn, submit them to the judges who will pick the winning window.

The awards for the winning Pharmacy Week windows in each of the states and the District of Columbia will have to be made by a certain date. The winning photographs (49 in all—48 from each of the states and 1 from the District of Columbia in the event that we are successful in getting them all to compete) will then be mailed to the National Chairman of Pharmacy Week who will submit them to a Committee of five judges to pick the winning window for the U. S. If you will study the mechanics of the plan, you will see that the best window in the United States will be awarded the national trophy. If one state has twenty photographs submitted in its state contest and another state has two thousand photographs submitted in its state contest, then the picture of the best window from the state having twenty photographs submitted for its state contest will have to compete with the best window from the state having two thousand photographs submitted in its state contest and if the best window in the former state is better than the best window in the latter state, the window from the former state will succeed on its merits.

In order that the Committee of judges to decide the national contest can function efficiently, the members of the Committee should be able to meet together. Therefore, it has been decided that all of the judges should reside in the same city or general location. The Committee should be changed each year and its geographical location selected in order that, over a period of years, all of the various sections of the country will be represented. So that this can be accomplished, I believe that it would be well to select the judges' Committee each year from the city in which the National Association of Retail Druggists' convention is held or at least, from that immediate vicinity. The members of the Executive Committee of the National Association of Retail Druggists are the choice of the retail druggists in the United States. Therefore, the Executive Committee represents the retail druggists of the country when it picks the convention city and the convention meets in the various sections of the United States over a period of years. By picking our judges' Committee each year from the city in which the National Association of Retail Druggists meets, we would be acting impartially and could also accomplish our purpose of selecting judges' Committees from the various sections of the country over a period of years.

Aside from the cost to each State Association or some firm or individual for the cups to be awarded in state contests each year, there would be no considerable expense connected with conducting a contest on a national scale, nor would there be an unusual amount of work for any one to do with the exception of the National Chairman of Pharmacy Week who is willing to assume the responsibility. The state of Missouri has for several years conducted a state contest. In 1930 they had 1275 windows competing. The judges' Committee eliminated all but five photographs and then became deadlocked; so the five photographs were sent to me. I selected Deans Arny, Anderson and Diner and Dr. Newcomb to serve with me to comprise a committee of five. We spent about two hours on the five photographs and took into consideration every possible point in judging them. It so happened that the photograph which we picked for first prize was from the store which has for three successive years, won the cup presented by Mr. O. J. Cloughly of St. Louis, although we did not know this at the time we met.

I should appreciate any advice which you may have to offer concerning the national window contest. I might add that we considered picking our judges' Committee each year from the city in which the N. A. R. D. convention is held rather than the city in which the A. PH. A. convention is held because the A. PH. A. sometimes meets at a resort as it did in 1929 when the meeting was held at Rapid City, South Dakota or in 1923 in Asheville, N. C.

To assure a successful National Pharmacy Week window contest in 1931 it will be necessary to get out our first journal releases in May so that the information will be included in all of the journals not later than the June issues. It will also be advisable to get the information in the hands of the presidents and secretaries of the State Associations prior to the state conventions which start in May. Considerable interest in the contest can be stimulated at the state meetings which will continue from May throughout the summer. I propose to start work immediately on the first stages of the publicity and I therefore request a new appropriation of $500.00 for 1931.

It will be necessary in order that the work may be started at once and properly advanced before the state conventions start for me to

receive the $500.00 appropriation ($250.00 from the A. PH. A. and $250.00 from the N. A. R. D.) as soon as possible. Will you, therefore, please submit my request to the Council?

I am sending a copy of the enclosed 1930 report of expenses to the Secretary of the National Association of Retail Druggists. In connection with the expense report, I have in my files the receipts and cancelled checks covering the main expenditures which will be available for your Auditing Committee at any time that it may wish to audit the account.

EXPENSES FOR 1930.

Roy Press, New York City. Printing letterheads and envelopes		$ 47.75	
Stenographic & Secretarial Service Co., New York City. Memeographing of letters, publicity articles for release, radio talks, news stories, etc., supplying stock, collating, stapling, etc.		119.60	
Expenses of assembling, packing and shipping Pharmacy Week Exhibit material, New York to Baltimore		2.00	
Emerson Hotel, Baltimore. For material and labor building five exhibit boards for A. PH. A. Convention	$23.50		
For sign painter	19.85		
For packing and crating exhibits to ship to N. A. R. D. Convention, Atlantic City	14.30		
For drayage of exhibit to freight depot in Baltimore	1.50	59.15	
Incidental expenses of installing exhibit at A. PH. A. Convention (thumb tacks, brass tacks, tips, etc.)		11.15	
Eldredge Express and Storage Warehouse Co., Atlantic City. Freight from Baltimore to Atlantic City and hauling exhibit from freight depot to storage house	$ 4.05		
Storage 5/22/30 to 9/15/30 and hauling exhibit from storage house to Atlantic City auditorium for N. A. R. D. Convention	10.75	14.80	
Photographs and incidental expenses in connection with exhibit at N. A. R. D. Convention		21.00	
Incidental expenses at six state conventions		5.16	
Committee expenses		21.25	
Postage and parcel post		121.00	
Telegrams and long distance phone		38.78	
Cabs and miscellaneous incidentals		22.50	$484.14
Unexpended portion of budget appropriated in 1928 (this amount remained as a balance from $500.00 appropriated jointly by the A. PH. A. and the N. A. R. D. for the 1928 campaign but was sufficient to finance both the 1928 and 1929 campaigns)		$ 4.34	
1930 appropriation ($250.00 from the A. PH. A. and $250.00 from N. A. R. D.)		500.00	
			$504.34
Less.			
1930 expenses			484.14
Balance on hand January 1, 1931			$ 20.20

(*Motion No. 29*) *It is moved by Bradley that an appropriation of $250 be added to the budget for 1931, for the Committee on Pharmacy week.* A vote is called for at this time but it will be considered as tentative if there is objection or if comments are submitted.

89. Year Book—Volume 18 (for 1929). The following communication has been received from Chairman DuMez of the Committee on Publications:

"The work on the YEAR BOOK, volume 18 (for 1929) has progressed to the point where the contract for its manufacture and distribution should be authorized by the Council. Quotations have been secured from a number of firms on a volume of the usual size and appearance. These were submitted to the members of the Committee on Publications who, by vote, have recommended that the contract be awarded to the Lord Baltimore Press, Baltimore, Md., which firm printed Volumes 15, 16 and 17, on the basis of their bid which was the lowest bid received."

(*Motion No. 30*) *It is moved by DuMez that the contract for printing and mailing the Year Book, Volume 18, be awarded to the Lord Baltimore Press, Baltimore, Md.*

90. Life Membership. Mr. J. C. Van Antwerp, Mobile, Ala. has become a life member through the payment of $25.00.

E. F. KELLY, *Secretary.*

TUNG OIL IN FLORIDA.

BY P. A. FOOTE.*

An industry in which there is not an over-production is quite uncommon to-day. You will see one in Florida next July on your way to the meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, in Miami. It is tung oil (China Wood Oil), a rival of linseed oil in the paint and varnish industry. Linseed now leads because the tung oil supply is inadequate. It is the most important constituent of waterproof paints and varnishes. It is also employed as the first coating on automobiles where such natural cellulose materials as Duco are used. Such coatings will not stick well unless they are preceded by an application of tung oil.

It is the best heat and weather-resistive oil known to science. Linseed oil varnishes turn white when exposed to boiling water, but tung oil varnishes are unaffected. Tung oil varnishes resist all kinds of weather to a remarkable extent. It is so valuable in wire and cable insulation that the General Electric Company of Schenectady, N. Y. uses nearly one and one-half million pounds of it annually.

The fruit of the tung tree produces from 34 to 35 per cent oil. The usual recovery by modern methods is $4^1/_2$ gallons of oil per 100 pounds of meats. Trees begin to bear when three years old. When six or seven they are full-grown and yield approximately 1000 pounds of seed per acre; the maximum possible yield has been 1800 pounds of oil per acre. At an average price of 12 to 14 cents a pound, it offers large possibilities. So far as is known, the tree has no enemies either fungus or insect. The trees have withstood temperatures as low as 15 degrees. Mature trees withstand extreme heat exceedingly well. The trees need minimum care, no spraying. They require much less labor and attention than citrus trees. Their fertilizer is inexpensive, for a good share of it is obtained from the by-product cake which is put back on the land.

The center of the producing area is Gainesville, where the University of Florida is located. The climate of the area closely approaches that in which the trees grow wild in China. The latitude, soil, rainfall and temperature are about the same.

American methods of production and handling produce a much superior product to that of China where slow hand labor is still used. This industry in Florida is relatively new but already has over 400 growers. It is estimated that in order to supply home consumption, 50,000 acres of trees should be planted. At the present rate of the industry's growth, this will take more than another generation.

W. M. Hankins has been a member of the Florida State Board of Pharmacy for the past eight years, is past-president of the Florida State Pharmaceutical Association and is now president of the National Association of Boards of Pharmacy. Mr. Hankins gave able assistance in the establishment of the College of Pharmacy at the University of Florida. Mr. Groover was instrumental in establishing the College of Pharmacy at the University of Florida. Mr. Jones was formerly president of the State Board of Pharmacy and also aided in establishing the College of Pharmacy at the University.

---

*Professor of Pharmacy, College of Pharmacy, University of Florida.

EDITORIAL NOTES

Editor: E. G. Eberle, 10 West Chase Street, Baltimore, Md.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* CHARLES H. LAWALL, *Vice-Chairman;* E. F. KELLY, *Secretary;* H. V. ARNY, A. G. DUMEZ, H. A. B. DUNNING, H. C. CHRISTENSEN, C. E. CASPARI, J. H. BEAL, W. BRUCE PHILIP, T. J. BRADLEY. *Ex-Officio Members:* H. C. CHRISTENSEN, *President;* WALTER D. ADAMS, D. B. R. JOHNSON, *Vice-Presidents;* C. W. HOLTON, *Treasurer;* E. G. EBERLE, *Editor of the Journal;* A. G. DUMEZ, *Editor of the Year Book;* C. B. JORDAN, *Chairman of the House of Delegates.*

Collaborators: The Members of the Council; E. FULLERTON COOK, *Chairman,* U. S. P. Revision Committee; E. N. GATHERCOAL, *Chairman,* N. F. Revision Committee; Chairmen of the Sections, A. PH. A.; E. E. SWANSON, B. V. CHRISTENSEN, RALPH E. TERRY, JOS. G. NOH, J. T. LLOYD; J. W. STURMER, *President,* A. A. C. P.; CHARLES B. JORDAN, *Chairman,* Executive Committee, A. A. C. P.; W. M. HANKINS, *President,* N. A. B. P.; HENRY C. CHRISTENSEN, *Secretary,* N. A. B. P.

PROPRIETARY ARTICLES TRADE ASSOCIATION DECISION.

The Imperial Privy Council, at London, Eng., has dismissed the appeal of the Proprietary Articles Trade Association (of Canada) against the decision of the Supreme Court of Canada, which upheld the validity of the Combines Investigation Act. The case has been pending since 1926, when an investigation was held under the provisions of the act into the operations of the P. A. T. A., the membership of which included all branches of the drug trade, which resulted in its being declared an illegal organization in the restraint of trade. The Provinces of Ontario and Quebec joined with the P. A. T. A. in the appeal of this finding on the ground that the Dominion Parliament had no power under the constitution to enact such a law.

"BELIEF IN ONE ANOTHER."

A letter from a pharmacist of Wisconsin has been received, which reads:

"When my son was not at school he was active in our drug store. I have always made it a point to teach him as much about the business as possible and I have impressed our ethics upon his mind. I have kept a close contact with him throughout his course through the medical school and learned that there were many occasions when he actually defended pharmacy even with the faculty. He has converted his fraternity brothers and the result is that a good many will graduate next June with at least good will toward pharmacists. I will say also that it is too bad that the medics do not receive more training in pharmacy."

MERCURIC CHLORIDE POISONING WITH RECOVERY FOLLOWING THE USE OF SODIUM THIOSULPHATE.*

BY HOWARD E. MARCHBANKS, M.D., C. HERBERT SMITH, M.D., AND HARRY L. CHURCH, M.D., PITTSBURGH, KAN.

As one goes through the literature on mercuric chloride poisoning, one is struck with the comparatively few patients who have survived massive doses of the drug. For this reason we report this case because in some respects, which will be brought out, we believe it to be unique.

The literature is so vast that to attempt to review it would be beyond the scope of our intentions. However, in preparing this report, we have scanned the literature on the subject and find few, if any, cases reported in which the patient has taken as large an amount of the poison and retained it as long as our patient did and recovered.

Hayman and Priestly reported a case in which the blood urea nitrogen reached 247 mg. on the nineteenth day of treatment and on infusion of physiologic solution of sodium chloride the urea nitrogen was reduced to 83 mg. and eventually came to normal, leaving no damage to the kidney. Both kidneys had been decapsulated in this patient with apparently little result.

In 1920, Ravant described the influence of small injections of sodium thiosulphate on the course of a severe arsenical dermatitis. This report was followed in 1922 by that of McBride and Dennie, in which a regular and sustained course of sodium thiosulphate was advocated

* *Jour A. M. A.*, 96 (1931), 611.

for the emergency and follow-up treatment of arsenical, mercurial and lead poisoning.

In 1928, Goldblatt reported the results of his experiments on the emesis interval in mercurial poisoning. He stated that in cases in which the patient had not vomited within thirteen minutes the prognosis was bad. In six fatal cases reported, the shortest interval was 15 minutes and the longest was 120 minutes. None lived with an interval over 15 minutes.

Hunter, in 1927, reported a fatal case of poisoning with mercuric chloride in which, at autopsy on the fourteenth day, he found there was practically complete regeneration of the tubular epithelium.

However, Harmon, in 1928, describes the pathologic changes of the kidney in four fatal cases of mercuric chloride poisoning in which intravenous injection of dosage over 5 mg. per Kg. of body weight had been given. He found degeneration and necrosis in the tubular epithelium of all four cases. The most severe lesions were seen in the proximal and distal convoluted tubules. The glomeruli apparently escaped.

Weiss, in 1924, reported a series of 135 consecutive patients poisoned by some form of mercury with only 8 deaths. These patients took from $1^1/_2$ to 50 grains (from 0.1 to 3.1 Gm.) of mercuric chloride. In only fifteen patients did a complete suppression develop. Of these, seven died. The patients who had the greatest difficulty were of the group that took more than 30 grains (2 Gm.) and those in whom the institution of treatment was delayed. The treatment used by Weiss was the intravenous injection of large doses of Fischer's solution; namely, crystallized sodium carbonate, 10 Gm.; sodium chloride, 15 Gm.; distilled water, sufficient to make 1000 cc., along with other alkali mixtures by mouth.

Rosenbloom, in 1919, described a method of treatment that depended chiefly on the use of alkalization for its benefits. Great credit is due these early workers for the progress they made.

Kahn, in 1915, reported a case in which a Greek had committed suicide by taking from 25 to 50 Gm. of mercuric chloride. An autopsy was done, the observations of which he reports. He likewise gives the amount of mercury that was recovered from the vomitus, the stool washings and the urine. He also gives the amount of mercury found in every organ of the body, including even the skin and the hair. He found that the liver contained the greatest amount, 303 mg. of mercury, the intestines next, 81.48 mg., and the brain third, with 59.9 mg. After these were the kidneys, lungs, spleen and pancreas. The other organs contained only small amounts.

This covers only a small amount of the literature on the subject but brings up a few of the more important things about poisoning with mercuric chloride.

PERSONAL AND NEWS ITEMS.

Prof. J. G. Beard, a member of the University of North Carolina faculty, School of Pharmacy, since his graduation in 1909, has been appointed dean of the University School of Pharmacy, succeeding the late Dean Edward Vernon Howell.

Dr. Charles Parsons has been appointed business manager of the American Chemical Society, of which he has been secretary since 1907.

Dr. S. A. Mitchell, director of the Leander McCormick Observatory, University of Virginia, will give the second Stuart McGuire Lecture at the Medical College of Virginia, Richmond, on March 25th. His subject will be "Eclipse Hunting in the South Seas." The Stuart McGuire Lecture was established a year ago in recognition of the services of Dr. Stuart McGuire to the college, to medical education and to surgery.

Dr. John C. Krantz, Jr., delivered the address on Founders' Day of the Philadelphia College of Pharmacy and Science. He was also honored with the degree of Master in Pharmacy by the latter. Research was the subject of Dr. Krantz's address, entitled "Heralds of Progress."

Nearly 300 guests attended a testimonial dinner given to **Dr. Henry V. Arny,** new dean of the College of Pharmacy of the City of New York, Columbia University, by the alumni association of the college and other local pharmaceutical associations, February 25th, in the Hotel New Yorker.

Frederick D. Lascoff was toastmaster. The speakers included William C. Anderson, dean of the Brooklyn College of Pharmacy; Marston T. Bogert, Columbia University representative on the college board of trustees; Nicholas S. Gesoalde, president of the New York State Pharmaceutical Association; Charles H. LaWall, dean of the Philadelphia College of Pharmacy and Science; Robert S. Lehman, secretary of the New York Veteran Druggists' Association; Edward Plaut, second vice-

president of the college; Julian Ronsheim, a student of the college; Henry Hurd Rusby, dean emeritus, and Dean Arny.

The speakers touched upon various phases of Professor Arny's life. Both Dean Arny and Dr. Rusby were given hearty ovations when they were called upon by the toastmaster.

W. L. Cliffe, member of the AMERICAN PHARMACEUTICAL ASSOCIATION for many years, was honored on March 2nd by his *Alma Mater*, the Philadelphia College of Pharmacy and Science, in recognition of his services and the 50th anniversary of his entrance into pharmacy.

John E. Andrus, Yonkers philanthropist (Arlington Chemical Company), celebrated his 90th birthday February 16th. "His chief pleasure," he said, "consisted in watching the boys and girls at the orphans' home he has established in Yonkers." Mr. Andrus has set aside 45 per cent of his fortune to build and endow a chain of orphanages and homes for aged persons.

A new chemical and medical research building is about to be erected by the Wellcome Foundation, Ltd., London, on a site 225 x 135 feet, which is now partly occupied by the foundation's bureau of scientific research. Plans and specifications for the new building, which will be at Gordon Street and Boston Road, London, have been drawn by Septimus Warwick, F.R.I.B.A. The foundation has maintained chemical and medical research laboratories for many years, but recent developments have made it necessary to coördinate and extend those activities. **Dr. Wellcome** has been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION for more than fifty years, and is deeply interested in the American Institute of Pharmacy, soon to be a realization.

Dr. Thomas S. Githens has been appointed lecturer on physiologic assaying at Temple University School of Pharmacy and at the Philadelphia College of Pharmacy and Science. Dr. Githens was, formerly, associate in physiology and pharmacology at the Rockefeller Institute for Medical Research in New York.

E. V. Zoeller and his sister, of Tarboro, N. C., were painfully injured in an automobile accident; both have recovered from their injuries. Mr. Zoeller became a member of the A. PH. A. in 1878.

"The O. Henry Drug Store," Greensboro, N. C., sustained loss by fire on January 11th. The building has been used for a drug store for about seventy years. In it once worked William Sidney Porter, famous short story writer for whom the present store was named. Practically all the files, together with the safe and its contents, were saved.

The basic research laboratory at the University of Cincinnati was destroyed by fire February 14th; the loss is estimated at about $50,000.

John Cameron, of Peiping Union Medical College (China), well and favorably known pharmacist, will soon visit in the United States.

OBITUARY.

ALBERT SCHAMMELHOUT.

Dr. Albert Schammelhout, a pharmacist of international reputation, died at his home in Brussels, January 20th, aged 60 years. He died while at work in his office after a meeting of the Pharmacopœial Committee who had worked with him until early morning hours, and it was while so engaged that he passed away.

Dr. Schammelhout was an active worker in the Second Conference for the Standardization of Formulæ for Potent Preparations which met in Brussels in 1925. For a time he was secretary of the International Pharmaceutical Federation, and was chairman of the Fourth Section of the International organization. He was director of the Codex Laboratory, of the National Society and also secretary of the Permanent Committee for the Preparation of the Belgian Pharmacopœia. He was an active worker in the Red Cross and secretary of the Belgium International League against Tuberculosis.

Dr. Schammelhout was largely responsible for much of the work accomplished by the International Conference for the Unification of the Formulæ of Potent Medicaments. He was characterized by his researches; his careful methods and order and his vast knowledge of all pharmacopœias were of great value in pharmaceutical activities. He was an honor guest of the British Pharmaceutical Conference, in London, in 1923, when he was made an honorary member of the Pharmaceutical Society of Great Britain. He was editor of the *Journal de Pharmacie de Belgique*, and was well and favorably known in scientific circles throughout Europe and by pharmacists in this country.

He employed his talents freely for the advancement of pharmacy. The circumstances of his death speak for his painstaking devotion to his work.

EDWARD VERNON HOWELL.

The Carolina Journal of Pharmacy, for March, mourns the death of one of the best and most beloved pharmacists of North Carolina. A sketch by a neighbor, Louis Graves, faces the frontispiece and part of it is reprinted because it so well depicts the character of the deceased. He said in part: "Scores of pictures of him come back to me as I sit here and look out of the window and across the three stone walls and the wide yard, to the old house where he lived. I used to see him appear on the back porch and talk to his beloved negro servant, Foy Baker. . . The strip of his land nearest mine was allotted to vegetables, and every year he would plant potatoes, lettuce, tomatoes, radishes, corn and beans. He inspected them day after day and gave directions to Foy and often he applied the mattock, hoe and rake with his own hands. His vegetable garden afforded me a great deal of amusement because it seemed that he did most of it for my benefit, for just about the time the things began to ripen he would go off somewhere—to Rocky Mount, to his house-boat down on the coast, or maybe to New York, and the night before he left he would come over and tell me he found he had to be away for some time and would I please help myself and thus keep the vegetables from going to waste. . . . ."

"He came here in the middle 90's, thirty-three years ago, and as the years slipped by he grew into the heart of the place and its heart into him. It is no wonder that to us who knew him best his departure seemed somehow as unnatural as if the great oaks on the campus or the old buildings had suddenly disappeared."

"Every year at Hallowe'en Dean Howell gave a party for children. Two or three dozen of them would gather at his home about nightfall and he would feed them with ice cream and cake and candy and distribute gifts among them."

Throughout the article the neighbor pays tribute to his friend. The writer recalls several visits from Dean Howell while in Philadelphia and during these days much of the time was spent in the old book stores.

The following is abstracted from a sketch sent to the JOURNAL:

Edward Vernon Howell, founder of the School of Pharmacy of the University of North Carolina and its dean for thirty-three years, died at his home in Chapel Hill of pneumonia in the evening of February 14th. No man was better known or better loved in Chapel Hill than Dean Howell. When he came to Chapel Hill it was a tiny, remote village and the University had a student body of only about 400, and a faculty of about 25. He saw the institution through all the stages of its growth and carried his own school of pharmacy with it. He took an active part in the business and social life of the community. He was devoted to folk lore and his home was a storehouse of antiques and relics as well as of rare old books, newspapers, diaries and letters.

The deceased was born in Raleigh, March 30, 1872. In 1892 he received the B.A. degree from Wake Forest College. In 1894 he graduated from the Philadelphia College of Pharmacy; from 1897 to 1898 he did postgraduate work in Chemistry at the University of North Carolina and since September 1897 has been professor of pharmacy and dean of the Department. He was a member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1900. He was chairman of the Section on Historical Pharmacy 1918 to 1919; member of the American Chemical Society, the North Carolina Pharmaceutical Association, the American Historical Association, American Folklore Society, Elisha Mitchell Scientific Society (its president 1913 to 1914) and of the Sigma Alpha Epsilon Fraternity. He was vice-president of the American Conference of Pharmaceutical Faculties 1923 to 1924, member of its Executive Committee, 1926 to 1927. At the U. S. P. Convention last May he was elected a member of the Revision Committee.

Funeral services were held at his home and interment was made in Raleigh.

Among the pallbearers were the following pharmacists: E. V. Zoeller, president of the North Carolina Board of Pharmacy; Chairman E. Fullerton Cook of the U. S. P. Revision Committee; C. B. Miller, president of the North Carolina Pharmaceutical Association; J. E. Murray of Baltimore; Turner F. Currens and H. S. Richardson of New York; F. W. Hancock of Oxford, N. C.; Professors J. G. Beard and M. L. Jacobs of the State University; Clyde Eubanks of Chapel Hill; I. W. Rose of Rocky Mount; K. E. Bennett, Bryson City; C. T. Council, of Durham, and B. Frank Page, Raleigh.

DANIEL JOSHUA FRY.

Daniel J. Fry, member of the AMERICAN PHARMACEUTICAL ASSOCIATION, who had been engaged in the wholesale crude drug business for the last forty-six years in Salem, Oregon, died February 15th at his home there after several months' illness, aged 71 years. Mr. Fry was born in Locust Valley, Pa., and educated in the Philadelphia public schools; he graduated from the Philadelphia College of Pharmacy in 1880. Two years later he migrated to Portland, Oregon, taking a position there as a pharmacist in the Windsom drug store and in 1885, entered business on his own account. For two terms Mr. Fry was a member of the Oregon state board of pharmacy.

Mr. Fry was a director of the First National Bank of Salem, of which he had been president from 1925 to 1930, retiring from that office because of ill health. He was also associated with the organization and directorate of the Oregon Pulp & Paper Company, the Oregon Linen Mills, and several other business concerns. He was a member of the Masonic fraternity.

The deceased leaves a widow, Mrs. Hettie Harbord Fry, two sons and two daughters. Daniel J. Fry, Jr., who was associated with his father, will conduct the business established by his father.

WILLIAM C. ZAMBONI.

William C. Zamboni, pharmacist of Owatonna, Minn., for more than thirty years, and member of the AMERICAN PHARMACEUTICAL ASSOCIATION, since 1922, died at his home after an illness extending over several years, aged 58 years.

After graduating in pharmacy he took a post-graduate course in chemistry at the Northwestern University in 1893.

Mr. Zamboni took a great interest in civic affairs and for quite a number of years was a member of the Board of Education, also a member of the City Council of which he was president for a time. In 1920 he was elected State Senator, a position filled by him with credit to himself in the service of the citizens. He is survived by his widow and one daughter.

FRANK ADAM DINKLER.

We are advised of the death of Frank Adam Dinkler, pharmacist of Hennessey, Okla., for many years, and member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1900, aged 66 years. As an expression of esteem the local business houses were closed during the funeral services. Mr. Dinkler came to Hennessey in 1892, where he purchased the Claywater Pharmacy, which he later moved to his own building. Before coming to Oklahoma Mr. Dinkler was in the drug business in Kansas. He is survived by his widow, one son and two daughters. The son is studying pharmacy at the University of Oklahoma and expects to complete his course this year.

BYRON M. MOULTON.

Dr. Byron M. Moulton, physician and surgeon of Springvale, Me., and member of the AMERICAN PHARMACEUTICAL ASSOCIATION, died January 27th, aged 65 years. Dr. Moulton was born in S. Sanford, Me., and after reading medicine in the office of the late Dr. Sawyer he studied at Johns Hopkins University and graduated in 1892. He returned to his home city and conducted a private hospital in Springvale. He was a member of the Masonic bodies.

Dr. Moulton is survived by two brothers, Leroy and Edgar Moulton.

JACOB S. BEETEM.

Jacob S. Beetem, registrar of the Philadelphia College of Pharmacy and Science for thirty-five years, died of pneumonia on February 11th. Mr. Beetem was born in Wilmington, Del., and graduated at Philadelphia College of Pharmacy in 1878. Until his appointment as Registrar he owned a retail pharmacy in Wilmington. He was a charter member of the Delaware Pharmaceutical Society and a regular attendant at its annual meetings. He is survived by his widow, two daughters and two grandchildren.

NICHOLAS S. BRUMERSKY.

Nicholas S. Brumersky, member of the AMERICAN PHARMACEUTICAL ASSOCIATION, died of pneumonia January 31st, aged 21 years. Mr. Brumersky had completed his first year at the Pittsburgh College of Pharmacy when he became ill. The deceased had made a fine record at the college and also had passed the Board of Pharmacy. He is survived by his parents, four sisters and two brothers.

WILLIAM KELLEY COLLIER.

William K. Collier, pioneer St. Paul pharmacist, and member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1892, died at his home on January 19th, aged 90 years.

Mr. Collier came to St. Paul in 1854 and was associated with Edward Biggs for about a quarter of a century. In 1885 he entered into a partnership with Edward Hippler and opened a pharmacy at 7th & Sibley Sts. He was a charter member of the Minnesota Pharmaceutical Association.

Among the honorary pall-bearers were Dean F. J. Wulling, Gustave Bachman, C. T. Heller and Henry Kruckeberg.

The deceased was held in high esteem by pharmacists throughout the state.

SOCIETIES AND COLLEGES.

DISTRICT MEETING NUMBER TWO OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

The following is a partial program of the Joint Meeting of members of State boards of pharmacy and delegates of the faculties of colleges of pharmacy in N. A. B. P. District No. 2, comprising New York, New Jersey, Pennsylvania, Delaware, Maryland and the District of Columbia—held in Hotel DuPont-Biltmore, Wilmington, Del.:

MONDAY MORNING SESSION, MARCH 9, 1931.

Introductory Remarks by Vice-President Lloyd N. Richardson for the Boards and Vice-President Hugh C. Muldoon for the Colleges.

Remarks by President J. W. Sturmer of the American Association of Colleges of Pharmacy.

AFTERNOON SESSION.

Subjects:

"A Supplemental Report by the Committee on Materia Medica," Messrs. Mansfield, Walton, Wood, Taylor and Lascoff.

"The Teaching of Theoretical Pharmacy," W. Paul Briggs.

"How Practical Is Theoretical Pharmacy?" Robert L. Swain.

"Disussion to Be Opened by Messrs. Saalbach and Wise.

"The Importance of a Definite Technique in Teaching Pharmaceutical Arithmetic," C. Leonard O'Connell.

"Pharmaceutical Mathematics," L. L. Walton.

Discussion to Be Opened by Messrs. Bradley and Wood.

"Should Pharmaco-Dynamics Be Included in the Regular Pharmacy Course?" H. H. Rusby.

TUESDAY MORNING SESSION, MARCH 10.

"Pharmaceutical Latin," J. W. Sturmer.

"The Importance of Pharmaceutical Latin from the Examiners' Point of View," Robt. P. Fischelis.

Discussion to Be Opened by Messrs. Muldoon and Lascoff.

"The Advisability of Boards of Pharmacy Holding Examinations in Pharmaceutical Jurisprudence," William C. Anderson.

"An Effort to Evaluate Practical Experience," Maryland Board of Pharmacy.

The meeting was well attended. A number of valuable papers, as indicated in the program, were presented, and important resolutions adopted. New York City was chosen for next year's meeting.

ARRANGEMENTS FOR ANNUAL MEETING OF THE NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION.

Plans for the 1931 convention of the National Wholesale Druggists' Association were considered at a luncheon meeting of the Committee on Arrangements and Entertainment held in the Drug and Chemical Club, New York City, March 3rd. Nearly all of the Committee members were present at the meeting.

The week of October 18th was fixed as the date, and the Ambassador Hotel, Atlantic City, N. J., was unanimously chosen as headquarters for the annual meeting.

The luncheon meeting was presided over by Harry J. Schnell, general chairman of the Committee. He told of a conference he had had with members of the Board of Control in the previous week and outlined in a general way the plans decided upon for the convention. A general discussion by members of the Committee followed, which covered various details. E. L. Newcomb, secretary of the Association, was the guest of the Committee and expressed pleasure at the large attendance and the display of interest on the part of the members.

DRUG-CHEMICAL DINNER.

H. V. Kaltenborn, formerly associate editor of the *Brooklyn Eagle;* Senator Royal S. Copeland of New York, and Count Ernesto Russo, attached to the Italian Embassy, Washington, will be the speakers at the sixth

annual dinner of the Drug, Chemical and Allied Trades Section of the New York Board of Trade, to be held March 12th, in the Hotel Commodore. Dr. William Jay Schieffelin will act as toastmaster.

PROGRAM OF THE AMERICAN DRUG MANUFACTURERS' ASSOCIATION.

SALES AND ADVERTISING PROBLEMS.

S. DEWITT CLOUGH, *Chairman.*

The American Drug Manufacturers' Association will hold its annual meeting at Virginia Beach, May 4 to 7, 1931. The following program has been announced:

"The Dentist as a Pharmaceutical Prospect," Frank B. Kirby.

"Industrial Uses of Pharmaceuticals," Walter Lee Rosenberger.

"Sample Requests from Doctors and Salesmen," A. M. Hayes.—Discussion led by Fred A. Lawson.

"A Survey of the Hospital Field," George Braun.—Discussion led by James Upsher Smith.

"Salesmen's Compensation for Jobbers' Sales," Turner F. Currens.

"Supervision of the Sales Force," Rolly M. Cain.—Discussion led by M. Galbraith.

"Radio and Moving Picture Advertising," R. D. Keim.—Discussion led by Don Merrell.

"What Research Has Done for the Doctor," Roger L. Adams, professor of Chemistry, University of Illinois.

FEDERAL WHOLESALE DRUGGISTS' ASSOCIATION MEETING.

The mid-winter meeting of the Federal Wholesale Druggists' Association was held in Chicago January 22nd and 23rd. President J. H. Marshall presided over the sessions. After preliminary remarks opening meeting, Mr. Marshall called upon Secretary R. E. Lee Williamson for a report as to the status of the resolutions adopted by the Rochester convention last September.

Secretary Williamson, in his report, stated that a copy of resolution number 7 had been forwarded to the AMERICAN PHARMACEUTICAL ASSOCIATION commending that body for its efforts on behalf of professional pharmacy.

O. J. Cloughly reported on the progress of the St. Louis retail drug survey.

Relative to the time and place of the 1931 annual convention, it was reported that both St. Louis and Milwaukee had extended invitations. Because Toronto had extended a tentative invitation the matter was held over pending definite word from the Canadian city.

INDIANA DRUGGISTS' BUSINESS CONFERENCE.

Business problems of the Indiana drug store operator will be ironed out at the first annual Indiana Druggists' Business Conference to be held at Purdue University on April 8th and 9th. The purpose of the conference, according to J. L. Weinland, head of the extension department, is to discuss methods by which the individual druggist can increase the profits of his business.

Before embarking into what is a new departure of the School of Pharmacy, a survey of all the druggists in the state was made, to learn the interest which might be taken in a meeting to discuss business methods. The response from druggists in all parts of the state was so favorable that plans were carried ahead and the dates set for the meeting. A number of outstanding business men have been secured as speakers, including men prominent not only in the pharmacy field but in other lines of business as well. No effort is to be made at the conference to discuss the pharmaceutical aspects of the druggist's work but the entire time will be devoted to discussion of the business end of the profession.

OKLAHOMA PHARMACEUTICAL ASSOCIATION.

At a meeting of the officers of Oklahoma Pharmaceutical Association, and druggists in western section of Oklahoma, preliminary plans were completed for the meeting of the State Association in Clinton, April 21st and 22nd.

WASHINGTON STATE PHARMACEUTICAL ASSOCIATION.

The Board of Managers of the Washington State Pharmaceutical Association in a recent meeting decided to hold the 1931 W. S. P. A. Convention in Port Angeles, Wash., during the latter part of June.

Among the bills in Washington State legislature are the following:

An act relating to chain stores and requiring an annual license fee of $100.00 for each store over one under the same ownership. There is no exemption for Washington owned stores.

Each druggist having more than one store would, under the act, pay an annual fee of $100.00 for each store over one.

A bill provides that enlisted men in the U. S. Navy with the rank of Chief Pharmacists Mate or Pharmacists Mate First Class who have had twelve years' service in the navy may be eligible for registration as pharmacists by examination.

OFFICERS OF MEXICO CHEMICAL SOCIETY.

The following are the officers of Mexico Chemical Society:

President, Ignacio Renteria; *Secretary*, G. G. Colin; *Treasurer*, Alfonso Castro; *Members of the Board:* T. Garcia Sancho and Esther Luque. Secretary Colin is a member of the AMERICAN PHARMACEUTICAL ASSOCIATION.

ARIZONA BOARD OF PHARMACY EXAMINATION.

The next examination to be given by the Arizona State Board of Pharmacy will be held beginning at 8:30 A.M., April 15th, at the State Capitol Building in Phoenix, and will continue through April 16th and 17th.

The subjects to be examined in are as follows: Chemistry, materia medica, toxicology and posology, pharmacy, pharmaceutical and chemical arithmetic and operative pharmacy. Applications to take the examination should be addressed to the Secretary, Arthur Lee Phelps, 725 East Fillmore Street, Phoenix.

LEGAL AND LEGISLATIVE.

THERE MAY BE OBSOLETE DRUG AND PHARMACY LAWS.

Not very long ago the *New York Times* referred approvingly to New Jersey's repeal of 1248 obsolete laws, and commented on the recommendation of the City Club that ninety-six statutes in the penal law of New York be repealed on the ground that they "were passed when Broadway was a quagmire and wandering pigs were the city's only traffic problem." Among these are statutes prohibiting the purchase of land from Indians, or dueling, or attending shows on Sunday, or holding parades on Easter Sunday, or advising suicide. The multiplicity of laws make technical lawbreakers out of law-abiding citizens.

NARCOTICS CONFERENCE EXPENDITURE APPROVED.

The House Committee on Foreign Affairs has favorably reported a resolution authorizing the appropriation of $35,000 for participation of the United States in the conference on the limitation of the manufacture of narcotic drugs to be held in Geneva, May 27th. The appropriation was recommended by the President and the Secretary of State.

NARCOTIC MANUFACTURERS SUPPORT U. S. IN CONTROL.

"American manufacturers of narcotics wholeheartedly support the government in its efforts to prevent the sale of narcotic drugs for other than medicinal uses," said Oscar R. Ewing in an address February 20th, at the fourth annual conference, in this city, of committees of the World Conference on Narcotic Education and the International Narcotic Education Association.

"The American method of controlling the manufacture and distribution of narcotics is the most efficient that exists or has been proposed," Mr. Ewing declared. "If this system were to be adopted by all other nations," he said, "the smuggling by means of which the illicit trade in the United States is supplied would virtually be eliminated and the illicit traffic throughout the world practically ended."

NARCOTIC CONTROL RULES ARE ISSUED BY TURKEY.

Regulations for the control of the manufacture and sale of narcotics drugs in Turkey have been published. The most striking feature of the rules is that manufacturers of narcotics must report daily to the public health officials the quantities produced and the amounts in stock on hand. All sales must be reported within forty-eight hours. Narcotics may be exported only to countries licensing importations, and a license covering the operations of the exporter must be shown for each transaction.

STATE BILLS AND LAWS.

Other state legislation than the following has been reported. Maine Pharmaceutical Association at a mid-winter session, held February 14th, favored legislation which would require applicants for "registered pharmacist" certificates to be at least 21 years of age, to be gradu-

ates of a school, college or department of pharmacy, and pay a $15.00 fee for the first examination and $7.50 for subsequent examinations. The bill requiring records of sales of flavoring extracts, containing more than 0.5 per cent of alcohol was not found. A $2.00 annual registration fee for drug stores met with favor. The state is said to have about $1500 accumulated from registration fees; this, and the income derived from registration fees would enable the pharmacy commission to be self-supporting.

A bill was introduced in New York Legislature seeking to prohibit the sale of foodstuffs in drug stores. The *Journal of the American Medical Association* not only accepts advertisements for food products but pass on their quality. No effort is made to approve, restrict or encourage lunch counters in drug stores, but it seems perfectly proper that certain foodstuffs should be sold in pharmacies; in fact, pharmacists should be qualified for selling sick room supplies, among which foodstuffs are important items.

Iowa has under consideration legislation which would require pharmacists to inform purchasers of certain designated poisons of the character of the poison and to ascertain that the drugs are to be lawfully used. H. 159, seeks to amend the pharmacy act and proposes (1) that those "who manufacture drugs, poisons or medicines for sale at either wholesale or retail" shall be deemed to be engaged in the practice of pharmacy, (2) to define a pharmacy as "a drug store in which the prescriptions of licensed physicians, surgeons, dentists or veterinarians are compounded and sold by a registered pharmacist or where drugs, medicines or poisons are exposed or sold at retail," (3) to prohibit all persons from allowing any one who is not a licensed pharmacist to sell or dispense any drugs, poisons or medicines, unless it is done under the immediate personal supervision of a licensed pharmacist, and (4) to prohibit a registered pharmacist from allowing his certificate, as a licensed pharmacist, to remain in or on display at any place of business unless he is legally employed there.

A bill has been introduced in the Indiana Legislature which proposes to declare unlawful the advertising or sales of any proprietary purporting to cure or relieve any human ailment.

Massachusetts-House Bill 1066 seeks to prohibit the retail of proprietary medicines containing more than 5 per cent of alcohol except upon prescription.

Oregon-Senate Bill 54 seeks to regulate the sale of veronal, etc.

New York-Assembly Bill 227 seeks to prohibit the sale of bichloride of mercury except upon prescription which may be filled but once and unless it is in the form of tablets of distinctive shape and color and is put up in bottles of distinctive shape and color, labeled for external use only. The bill says, in part: "Nothing herein contained shall be construed to prohibit the sale and dispensing of bichloride of mercury in any form, shape or color, when combined or compounded with one or more other drugs or excipients, for purposes of internal medication only, but no tablets containing a greater amount of bichloride of mercury than the maximum, non-poisonous, pharmaceutical dose shall be sold at retail or given away, except upon a prescription."

Texas S. 78 proposes to define "poison," within the meaning of the pharmacy practice act, to mean "any drug, chemical or preparation which, according to the United States Pharmacopœia, National Formulary or materia medica, is liable to be destructive to human life in quantities of sixty grains or less." Texas also seeks to provide for a pharmacist and a dentist on the State Board of Health.

DRUG ADVERTISING BAN PROPOSED IN SENATE BILL.

Senator Royal S. Copeland, of New York, has introduced in the United States Senate a bill (S. 5656) designed to give the Food and Drug Administration control over the advertising of drugs.

This bill would extend the Food and Drugs Act definition of the misbranding of drugs to include the following:

"If, in any manner, or by any means whatsoever, it, or the ingredients or substances contained therein, or the curative and therapeutic effect of such articles or its ingredients or substances, are falsely or deceptively advertised, represented or described in any territory or the District of Columbia, or in any state to which such article is shipped or delivered for shipment from any other state, or from any territory or the District of Columbia, or from any foreign country. No such advertisement, representation or description shall be held to constitute misbranding for a period greater than six months after such advertisement, representation or description was made or published."

BOOK NOTICES AND REVIEWS.

Quantitative Pharmaceutical Chemistry. By GLENN L. JENKINS, PH.D., Professor of Pharmaceutical Chemistry, School of Pharmacy, University of Maryland; and ANDREW G. DUMEZ, PH.D., Professor of Pharmacy and Dean of the School of Pharmacy, University of Maryland. First Edition. McGraw-Hill Book Company, Inc., New York. 1931. xxiii + 408 pages, 69 figs., 13.5 x 20.3 cm. Price $3.50.

The object of the book, as stated by the authors, is not only to provide students of pharmacy with a systematic course covering all of the quantitative chemical and physical methods official in the U. S. Pharmacopœia and National Formulary, but also to present some of the generally applicable, non-official methods of analysis which are widely used in pharmacy and with which all students pursuing the profession should be familiar.

The book is divided into four parts. Part I, intended for students who have completed one full year of general inorganic chemistry and qualitative analysis, includes those topics usually treated in elementary textbooks of quantitative analysis. Part II deals with the determination of physical constants and includes determination of solubility, specific gravity, melting and boiling point, refractive index, optical activity and viscosity. Part III includes special chemical methods, such as the determination of ash and moisture; extractive content; chemical constants of oils, fats, waxes, balsams and resins; and special assays of volatile oils, alkaloids and enzyme-containing substances. Parts II and III are to be given after the student has completed organic chemistry. Part IV includes the determination of hydrogen-ion concentration by both potentiometric and colorimetric methods; other exercises in colorimetry and nephelometry; and the ultimate analysis of organic compounds. Part IV is recommended for advanced students and is given by the authors as part of a course in food and drug analysis during the fourth year.

Directions for the various procedures and assays are taken, for the most part, directly from the U. S. Pharmacopœia and National Formulary, thus correlating even the student's elementary training in quantitative analysis with his pharmacy. In view of the rather limited amount of time devoted to quantitative analysis in many colleges of pharmacy, this seems wise. Since these directions are of necessity brief and condensed, the authors have wisely added ample explanatory material in order that the student may acquire adequate mastery of quantitative technic. The large number of exercises and assays included provides for a considerable degree of elasticity in the time devoted to quantitative methods and permits the instructor to vary the exercises with different classes, should he desire to do so.

In view of the fact that the book is expressly designed to be used by the student over a period of two to three years, it would seem desirable that more attention be given in Part I to certain of what might be called, the essentials of "pure" quantitative analysis. For example, little is said of the precision to be obtained by accepted methods. The student is told, in a brief paragraph, that his results must check, but nowhere is he told how he may know when they check. No mention is made of the meaning of significant figures and the authors themselves err frequently in this respect, normality factors being carried out to four places of decimals even though the titrations are performed with one-normal solutions and burette readings recorded only to tenths of a cubic centimeter. It should be noted that practically all the assays in the sections on acidimetry and alkalimetry are preformed with one-normal solutions, the wisdom of which is perhaps open to question. The use of diphenylamine as an inside indicator in dichromate-Fe^{++} titrations is not mentioned.

On the whole, however, the authors have assembled a tremendous amount of material into compact, well-organized and teachable form. The questions and problems which follow most of the assays are adequate in number and well selected. Especially useful to both instructor and student are the tables, 46 in number, at the end of the respective sections devoted to each quantitative method, listing all the official substances assayed by that method in both the U. S. P. and N. F., size of sample required, appropriate titer and official requirement.

The text fills a long felt need and will no doubt be welcomed by teachers who offer courses of this nature.—A. P. B.

ADDITIONAL NEWS AND ASSOCIATION ITEMS.

OFFICERS OF IOWA PHARMACEUTICAL ASSOCIATION.

Iowa Pharmaceutical Association at its 52nd Annual Meeting, held in Des Moines, February 4th to 6th, elected the following officers:

President, John Heerema, Pella
First Vice-President, J. S. Veenker, Northwood
Second Vice-President, Olen Hill, Clinton
Treasurer, J. M. Lindley, Winfield.

The secretary is J. W. Slocum, of Indianola. The members of the Legislative Committee are: George Judisch, Ames; John Webber, Cascade; Harry Eaton, Des Moines; Walter Eaton, Des Moines.

The Executive Committee is composed of Paul J. Jepson, Newton; Robert Gibson, Des Moines; Robert Harvey, Missouri Valley; John Heerema, Pella.

The meeting was well attended and a number of interesting addresses were features of the program. A Veterans' luncheon was enjoyed by those who had served in pharmacy for a quarter of a century or more.

MID-WINTER MEETING OF NEW JERSEY PHARMACEUTICAL ASSOCIATION.

Reorganization plans were discussed at the Mid-Winter Meeting of New Jersey Pharmaceutical Association, held at Hotel Robert Treat, Newark, January 27th.

President Schumach commended the presentation of certificates to newly registered pharmacists, as recently carried out, because it impressed them with their responsibilities as pharmacists. He referred to Pharmacy Week, public health and other matters of pharmaceutical interest.

Dudley G. Singers' report as chairman of the N. A. R. D. Atlantic City Convention showed that a surplus had resulted which enabled the Committee to turn into the treasury of the State Association $1942.15 and a like amount to the Atlantic City Drug Club.

On motion of Dr. R. P. Fischelis, which carried, Governor Morgan F. Larson was commended for his attitude on the consolidation of professional boards as expressed in his message to the State legislature.

TINCTURE OF DIGITALIS SURVEY.

Bulletin No. 3, issued by the Drug Trade Bureau of Public Information states:

"The quality of Tincture of Digitalis supplied to druggists of New Jersey by pharmaceutical manufacturers and, in turn, supplied by them to the public on physicians' prescriptions, is generally of standard quality, according to the report of a survey just completed by the Board of Pharmacy of the State of New Jersey.

"The survey included purchases of Tincture Digitalis in the open market from nine pharmaceutical manufacturers, as well as prescriptions for Tincture Digitalis filled in twenty-four retail drug stores located in twenty of the twenty-one counties of the State."

After giving details of collection and methods the report states:

"It is safe to conclude from the survey just completed, that the druggists of New Jersey are generally receiving a good quality Tincture of Digitalis from the manufacturers and that the quality of the Tincture dispensed on prescriptions is high. In view of the importance of this drug in emergencies, the facts brought out in this survey should prove reassuring to the public and to the medical profession."

A highly entertaining talking picture entitled "A Romance of the Drug Industry," has just been released by Eli Lilly & Company. While moving pictures are not new in the drug trade, but this is, probably, the first industrial film in the pharmaceutical business in which sound has been recorded on film. The scenario gives a brief history of the business, sketches the early days, etc. The scenario and lecture were written and recorded by **H. S. Noel.**

The German Pharmaceutical Society has developed films showing retail pharmacy activities.

MA HUANG TRADE, CHINA.

Most of the Ma Huang exported from Tientsin goes to Great Britain where there is a growing demand. Prices c. i. f. London range from 25 to 28 pounds sterling per ton of 2240 pounds for the "mountain" variety. Basing estimates on the different freight rates between Tientsin and London, the Tientsin Ma Huang would cost $0.05 per pound c. i. f. New York. While some Ma Huang has been shipped from Tientsin to the United States, the volume has been small. Ephedrine derivatives prepared by European and American chemical manufacturers are quite popular in China. (Trade Commissioner Harold D. Robinson, Tientsin.)